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THE WHALES, DOLPHINS, AND PORPOISES OF THE EASTERN NORTH PACIFIC A GUIDE TO THEIR IDENTIFICATION IN THE WATER

by

Steve Leatherwood

W. E. Evans

Naval Undersea Research and Development Center

and

Dale W. Rice

National Oceanic and Atmospheric Administration

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13. ABSTRACT

This field guide is designed to assist the layman in identifying the whales, dolphins, and porpoises he sees in the eastern North Pacific, including all the area north of the equator and east of 180 degrees W longitude. The animals described are grouped not by scientific relationships but by similarities in appearance in the field. Photographs of the animals in their natural environment are the main aids to identification.

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Released by
C. S. JOHNSON, Head
Marine Bio-Science Division

Under Authority of
G. B. ANDERSON, Head
Ocean Sciences Department

PREFACE

This guide is designed to assist the layman in identifying the whales, dolphins and porpoises he sees in the eastern North Pacific, including all the area north of the equator and east of 180°W longitude (Figure 1). It emerged from a project entitled Whale Watch during which mariners were equipped with sighting forms and aids to species identification and asked to tell us what they were seeing. The purpose of the program was to take advantage of the fact that fishermen, naval personnel, commercial seamen, pleasure boaters, and coastal aircraft pilots together canvass large areas of the oceans which scientists have time to survey only occasionally. Obtaining regular reports from responsible observers can permit scientists to more clearly understand migration routes and seasonal variations in abundance of porpoise and whale species in those areas. The response to the program was enthusiastic, but the observers had difficulty identifying the animals from the descriptions and drawings available. No adequate field guide existed. All of the many good publications were either too scientific in content or too limited in area or species covered. In addition, most used drawings or photographs of beached animals, which looked very little like the living animals at sea. What was needed was a field guide in which animals were grouped together not on the basis of scientific relationships, but on the basis of similarities in appearance in the field and in which photographs of the animals in their natural environment are the main aids to identification. It is to that end that this publication is directed.

The "museum piece" photographs usually used in keys have been replaced whenever possible by photographs and drawings of live animals in their natural environment. These photographs show the observer the whale as he actually sees it, often only a blow, a dorsal fin, or a quick glimpse of the flukes as the animal begins a dive.

The completed guide will be used in the continuation of NUC's Whale Watch as well as in the recently instituted Platforms of Opportunity program of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service. This latter program will request cetacean sighting information from government research vessels and commercial fishermen operating in the eastern North Pacific. A later extension will expand the program to cover all oceans in which NOAA vessels operate and will result in identification guides such as this one for each of those regions.

As a part of continuing research, this guide will be revised whenever possible. Suggestions for its improvement will at all times be welcome.

ACKNOWLEDGEMENTS

In preparing this guide we have drawn freely from the literature on cetaceans of this region and have supplemented it with our own observations. With the kind permission of the Fisheries Research Board of Canada Biological Station, Nanaimo, British Columbia, we have followed the basic approach of Gordon C. Pike's brief *Guide to the Whales, Porpoises*

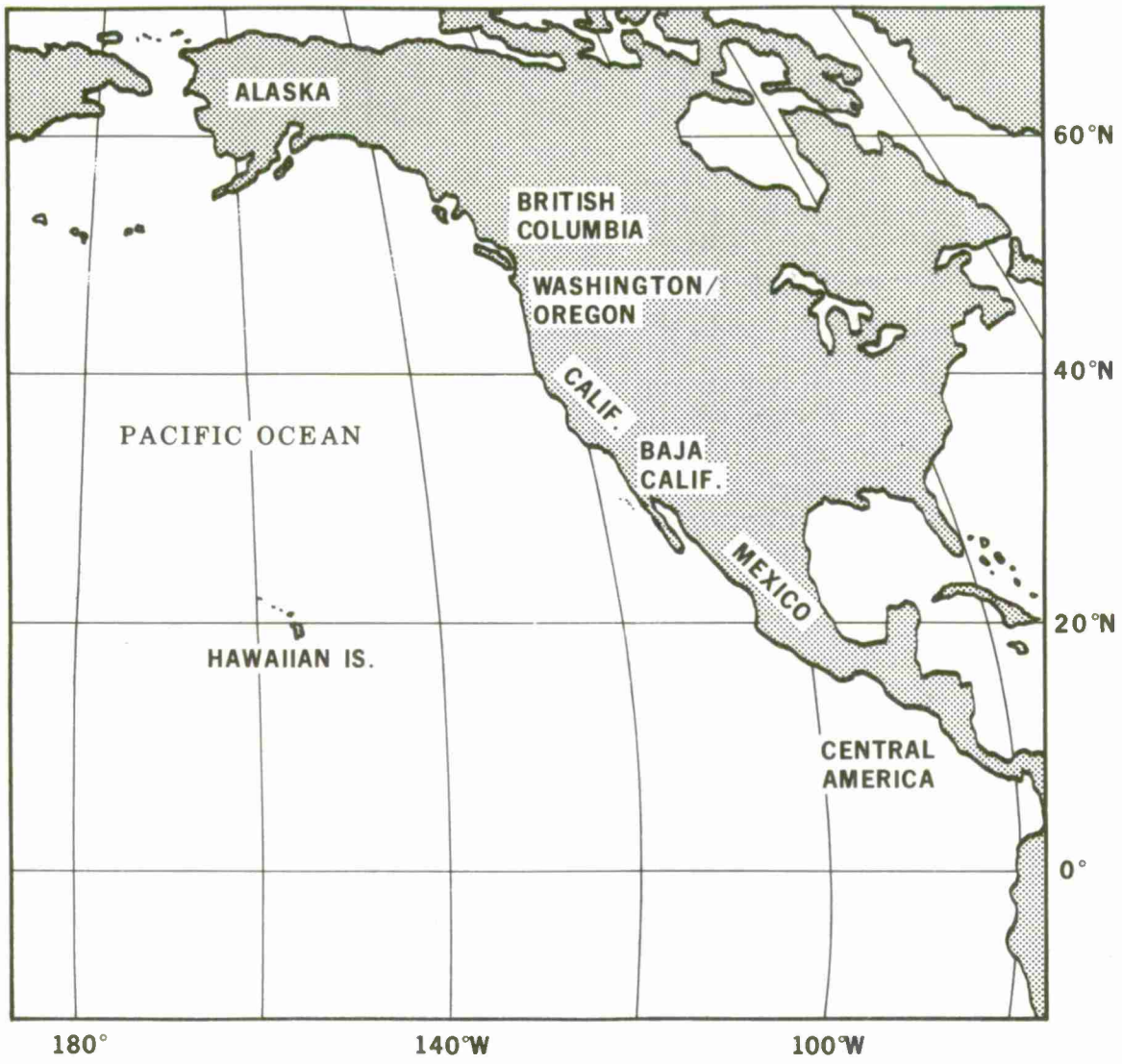

Figure 1. The geographical area covered by this guide.

and Dolphins of the North-East Pacific and Arctic Waters of Canada and Alaska, and have modified and reprinted one of his illustrations.

Many people have contributed photographs. We are indebted to I. A. MacAskie, P. Shuyler, and J. Thompson of Nanaimo; K. C. Balcomb of Moclips Cetological Society; W. F. Perrin, John LaGrange, F. S. Hester, R. L. Garvie, and R. E. Green of the National Marine Fisheries Services; W. E. Schevill of Woods Hole Oceanographic Institution; W. J. Houck of Humboldt State College; Bob Noble, Marineland of the Pacific; Alberto Laviano of Mondo Sommerso Magazine; Dr. R. G. Gilmore of the San Diego Museum of Natural History; Dr. David K. Caldwell of the Communications Research Institute, University of Florida; K. Gilbey Hewlett of Vancouver Public Aquarium; Dr. Kurt Binurschke of the University of California San Diego Hospital; the Japanese Whales Research Institute; Nanaimo Free Press; Paul F. Brodie of the Fisheries Research Board of Canada; Robert F. Green, Ventura College; A. Blair Irvine of Mote Marine Laboratory; Kenneth D. Sexton; and Dr. W. C. Cummings, Dr. James Fish, F. G. Wood, B. C. Parks, J. D. Hall, and Larry Sammons of NUC.

W. E. Schevill, F. G. Wood, and W. F. Perrin critically read the manuscript.

To these and to all who use this guide to help further knowledge of cetaceans in the eastern North Pacific, we are grateful.

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INTRODUCTION

All whales, dolphins, and porpoises belong to an order or major scientific group called the cetaceans by scientists. They are all mammals (air breathing animals which must maintain a constant body temperature, bear their young alive and nurse them for a time) which have undergone extensive changes in body form and function to cope with a life spent entirely in the water. The nostril, now called a blowhole, has migrated to the back of the head to facilitate breathing while swimming; the forward appendages have become flippers, and the hind appendages have nearly disappeared and have been replaced by a fibrous, horizontally flattened tail. Scientists recognize two suborders of cetaceans, the whalebone whales (suborder Mysticeti) and the toothed whales (suborder Odontoceti). The two groups are separated in the following ways:

BALEEN OR WHALEBONE WHALES. These animals are called whalebone whales because instead of teeth they have up to several hundred plates of baleen or whalebone suspended from the upper jaw. They use these plates to strain their food, which for many species consists of "krill" (primarily crustaceans) and for others small schooling fish, by taking water into the mouth and forcing it out through the fringes of the overlapping baleen plates. Baleen whales are also distinguishable from toothed whales by having paired blowholes. There are at least eight species of baleen whales in the eastern Pacific, ranging in size from the minke whale (25-33 feet) to the blue whale (85 feet).

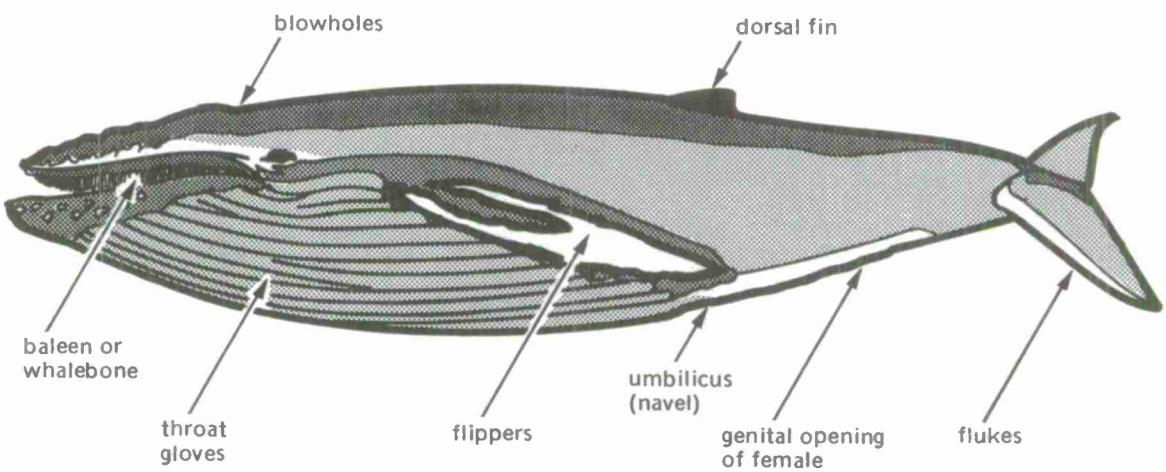


Figure 2. A baleen whale (humpback) showing the main body parts referred to in the text.

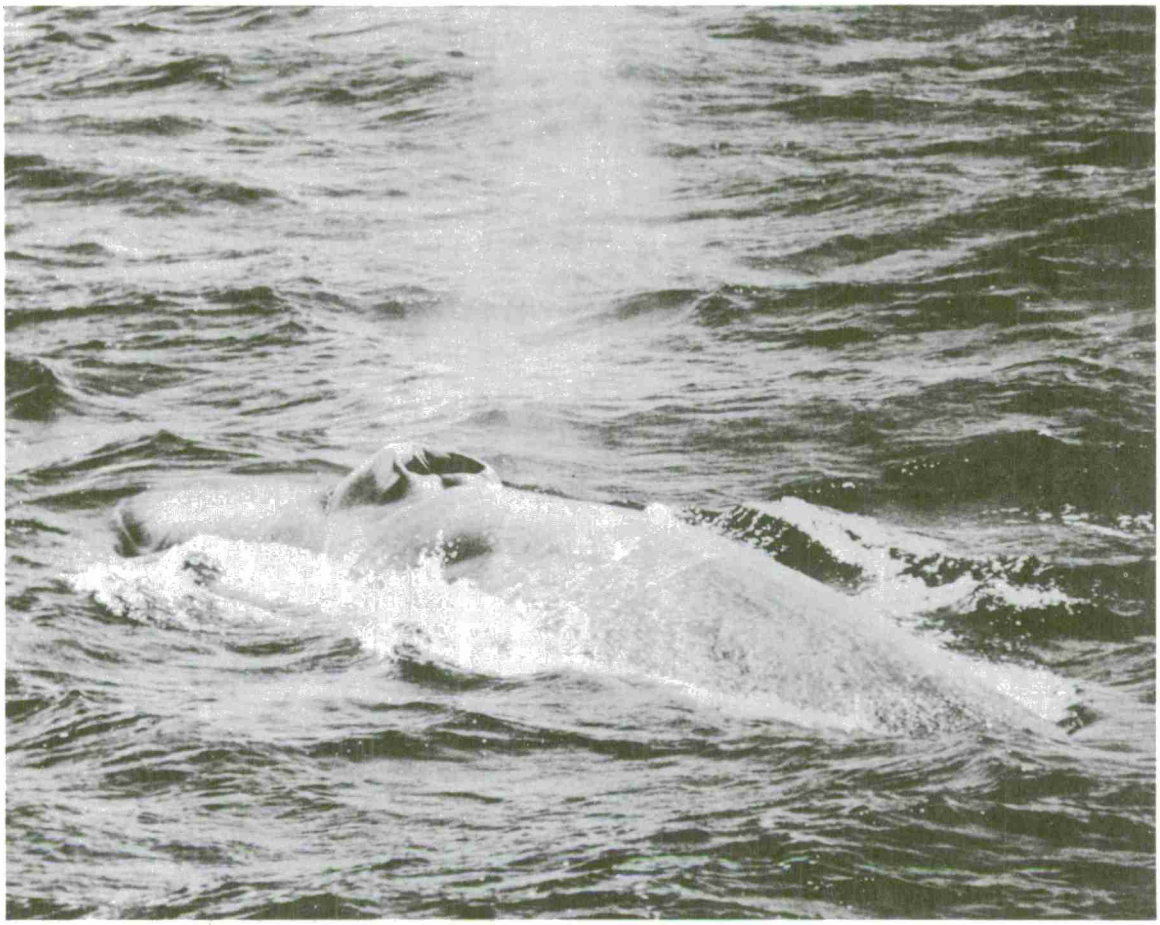


Figure 3. A blue whale with the paired blowholes open during respiration. The paired blowholes distinguish this animal as a baleen whale. (photograph by K. C. Balcomb)

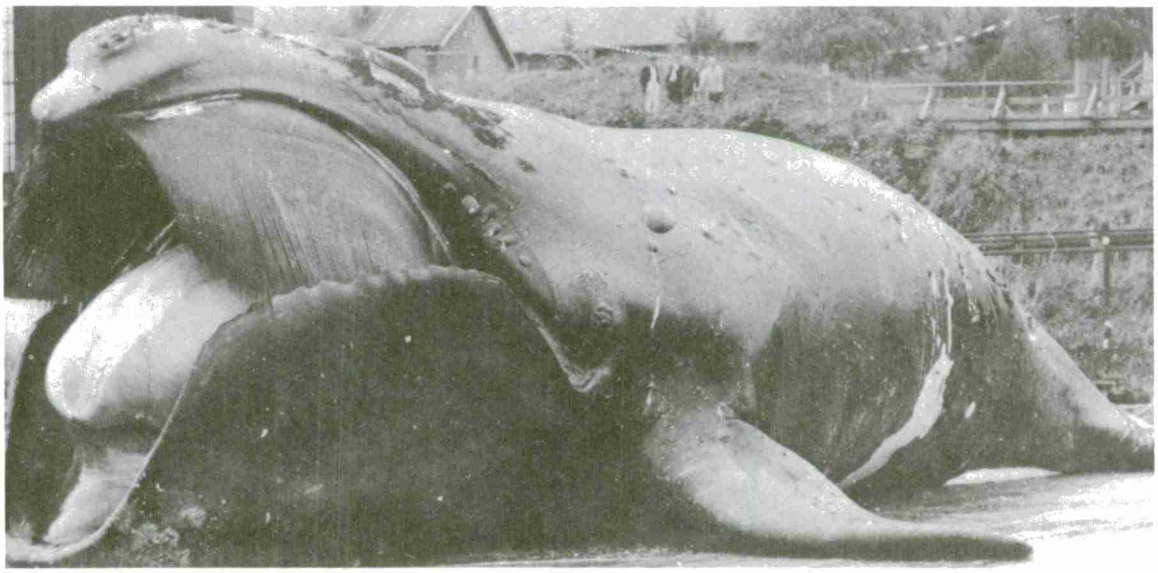


Figure 4. A right whale on the deck at a whaling station. Note the long fringes of baleen suspended from the upper jaw. (photograph by G. C. Pike)

TOOTHED WHALES. Unlike the baleen whales, the toothed whales do have teeth after birth, though their number varies from one to over 250 and though they may sometimes be concealed beneath the gum. In addition, they have only a single blowhole. This group includes the animals commonly called dolphin or porpoise as well as some commonly called whales (for example, the sperm whale). There are about 20 species of toothed whales in the eastern North Pacific ranging in size from the common or harbor porpoises (approximately 5 feet) up to the sperm whale (approximately 60 feet).

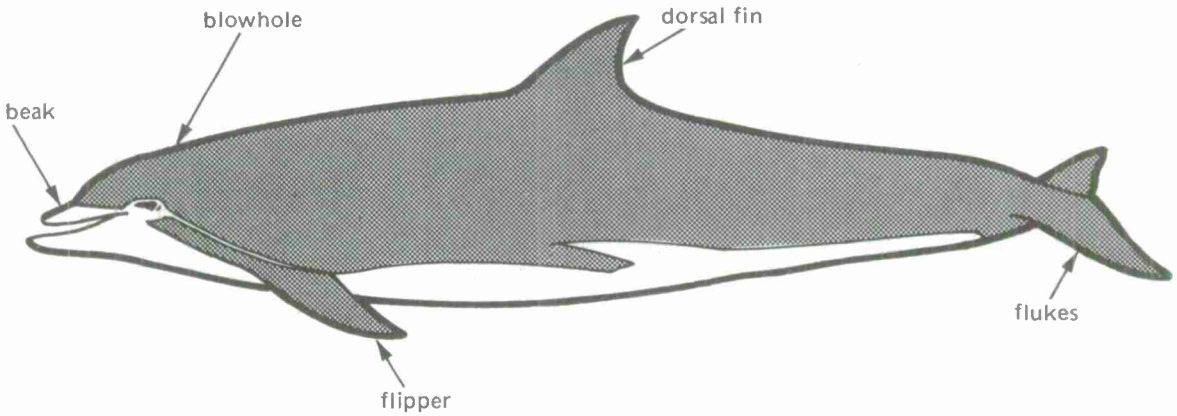


Figure 5. A toothed whale (bottlenose dolphin) showing the main body parts referred to in the text.

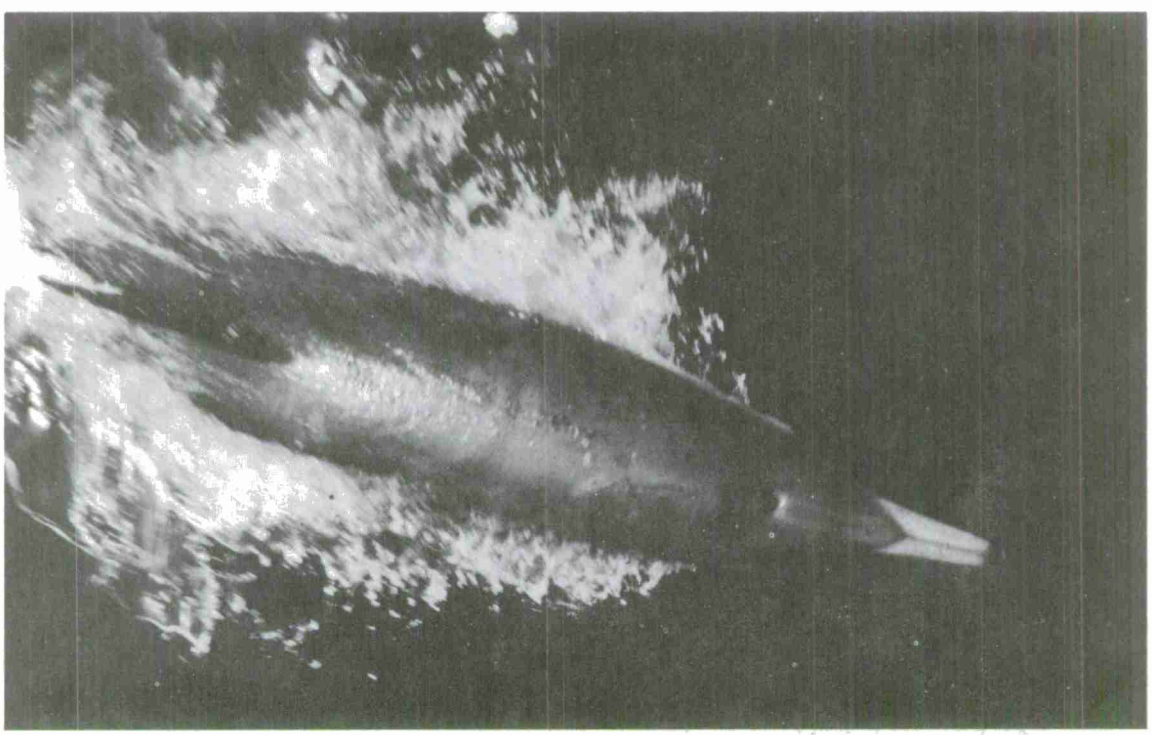


Figure 6. A white-bellied porpoise on the bow of a research vessel off Baja California. Note the single open blowhole. (photograph by J. D. Hall)

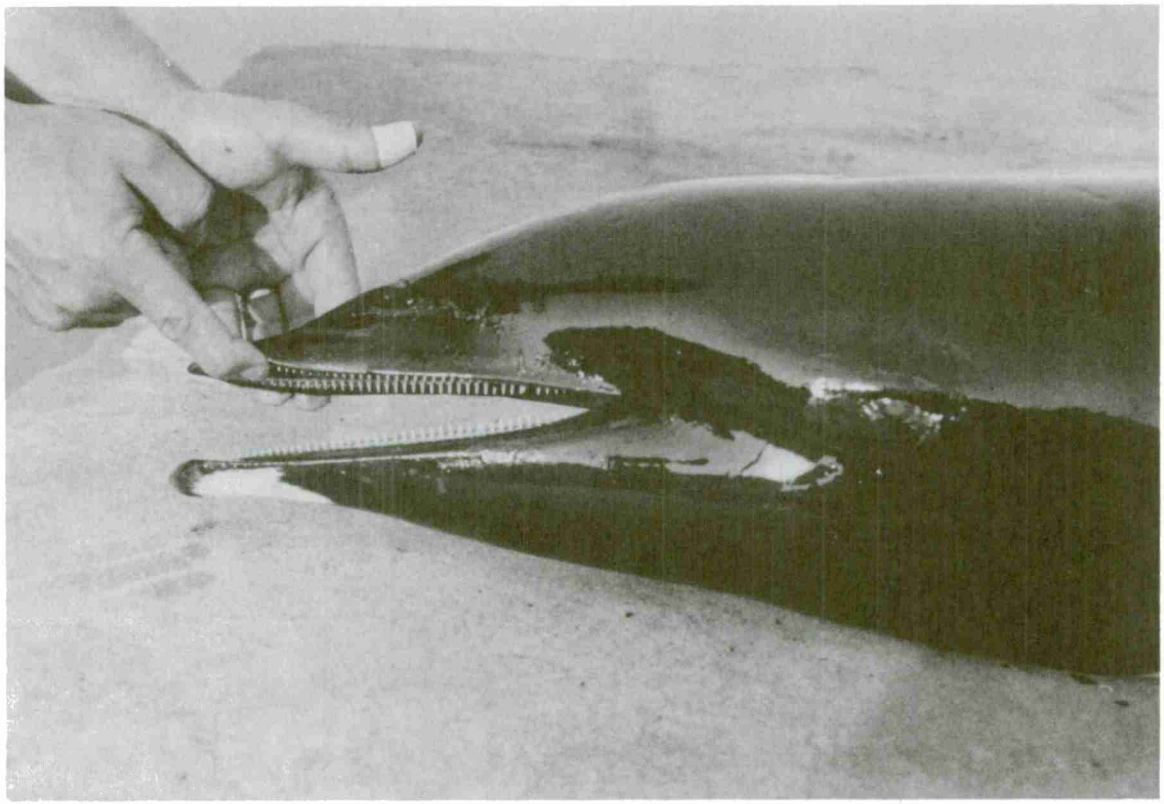


Figure 7. The mouth of a northern right whale dolphin. All toothed whales have teeth, though the number varies from 1 to over 250. (photograph by F. G. Wood)

DOLPHIN OR PORPOISE? There is some controversy over the correct usage of the terms dolphin and porpoise. Common names of any species may vary from locale to locale and even from person to person. In this guide, animals are cited by the common names most frequently used in the eastern North Pacific. Other common names by which they may be known are listed in the text. It is our opinion that the usage of the terms dolphin and porpoise as the common names of cetaceans is largely a matter of personal preference.

ORGANIZATION OF THE GUIDE

The differences between baleen and toothed whales are easy enough to see in animals washed up on the beach or maintained in a tank at a zoo or aquarium. But since an animal at sea can seldom be examined that closely, its most obvious characteristics may be its overall size, the presence or absence of a dorsal fin, its prominent coloration or markings, or its swimming, blowing, and diving characteristics. For that reason, regardless of their scientific relationships, all the whales, dolphins, and porpoises covered in this guide are

divided into three groups. Those over 40 feet long are discussed in Part I, those from 13-40 feet in Part II, and those less than 13 feet in Part III. Each section is further divided into those animals with a dorsal fin and those without. From that point, animals likely to be confused in the field are grouped together and the important differences between them are discussed.

HOW TO USE THE GUIDE

The three parts of the guide are preceded by an index which is a summary of the more obvious characteristics of each species. To use the guide, (1) first estimate the animal's approximate size and determine whether or not it has a dorsal fin. (2) Note also any distinctive features of body shape and coloration and observe its general behaviour, including swimming, blowing, and diving characteristics. Making a brief sketch at this point may aid in identifying the animal or in later recalling its distinctive features. (3) Using the index, locate the section to which the animal probably belongs. (4) Then, for more detailed information, consult the section indicated. There you will find a more complete discussion of the animal's range, size, and distinctive characteristics. In addition, you will find a brief discussion distinguishing it from animals with which it is likely to be confused.

REPORTING SIGHTINGS

Though learning to identify the whales, porpoises, and dolphins one sees may be exciting in itself, many persons may want to participate in the continuation of Whale Watch or of NOAA's Platforms of Opportunity Program by reporting their sightings to scientists who can use the information. To that end, a sighting report form has been prepared. Copies are included after Appendix B. More are available upon request to the Naval Undersea Research and Development Center, San Diego, California, or to the National Marine Fisheries Service, La Jolla, California.

INDEX

I. LARGE WHALES (40-90 feet in overall length)

A. With a Dorsal Fin

The five whales belonging to this group, the blue, the fin, the sei, Bryde's, and the humpback, are distinguishable from each other primarily by differences in swimming, blowing, and diving behavior and by subtle differences in the size, shape, and position of the dorsal fin.

- Body very large, up to 90 feet long.

  Body basically bluish with mottlings of white.
  Head broad and round, viewed from above; flat in front of blowhole, viewed from side.
  Dorsal fin very small (8-13 inches), triangular, and in last 1/3 of body.

  Blue Whale
  (Balaenoptera musculus)
  Section 1

- Body large; up to at least 70 feet long.

  Body mostly gray; underside of flukes, flippers, and belly white; right lip and right front baleen white.
  Head sharply V-shaped, viewed from above.
  Dorsal fin 2-3 feet tall and more than 1/3 forward from tail.

  Fin Whale
  (Balaenoptera physalus)
  Section 2

- Body a maximum length of 52 feet.

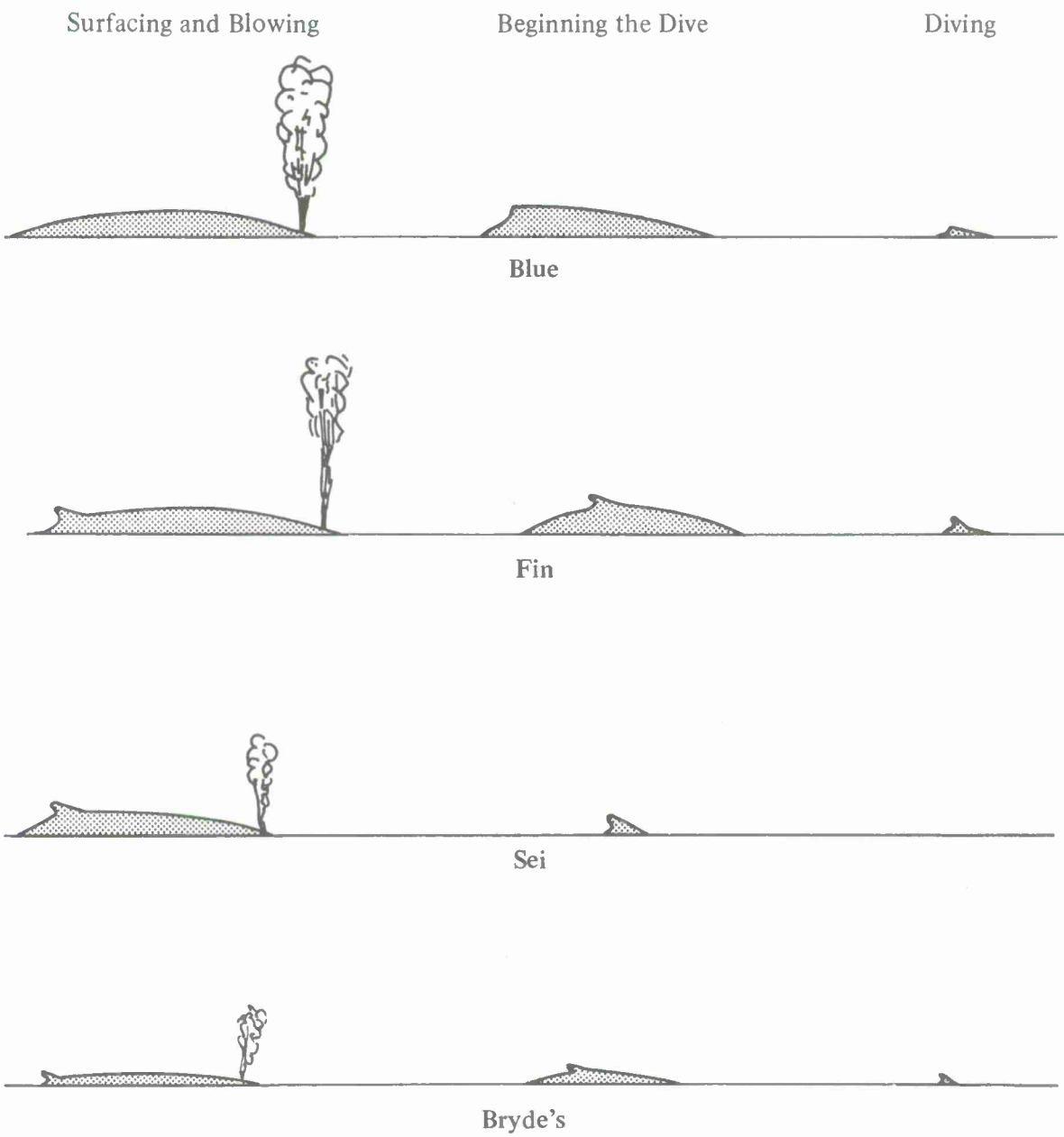
  Body appears shiny; gray on back and white on front of belly; undersides of flippers and flukes are dark; baleen black with grayish fringe.
  Dorsal fin is 3 feet tall, strongly backcurved, and more than 1/3 forward from tail.
  Flukes not arched high in dive.

  Sei Whale
  (Balaenoptera borealis)
  Section 3

- Body 45 feet long.

  Back dark gray.
  Head in front of blowhole shows series of grooves.
  Dorsal fin 2-3 feet tall, backcurved, located in the last 1/3 of the back.

  Bryde's Whale
  (Balaenoptera edeni)
  Section 4



Swimming, blowing, and diving characteristics of the blue, finback, sei, and Bryde's whales.

I. LARGE WHALES (40-90 feet in overall length). (Continued)

- Body 50 feet long.

  Body black with irregular white area on belly; underside of flippers white; underside of flukes often white.
  Head in front of blowhole flat and covered with knobs.
  Flippers are very long (nearly 1/3 as long as body) and scalloped on the leading edge.
  Dorsal fin is small, hooked, highly variable in shape, and located in last 1/3 of back.

  Humpback Whale
  (Megaptera novaeangliae)
  Section 5

B. Without a Dorsal Fin

The three whales belonging to this group, the right, the sperm, and the gray, may be distinguished from each other primarily by the distinctive differences in the shape of the blow, by characteristic body shapes and features, and by coloration.

- Body to 70 feet long.

  Body black; back smooth.
  Head covered with "bonnets".
  Lower jaw very arched upward.
  Two blowholes clearly separated.
  Blow projects upward in wide V.

  Right Whale
  (Balaena glacialis)
  Section 6

- Body to 55-60 feet long.

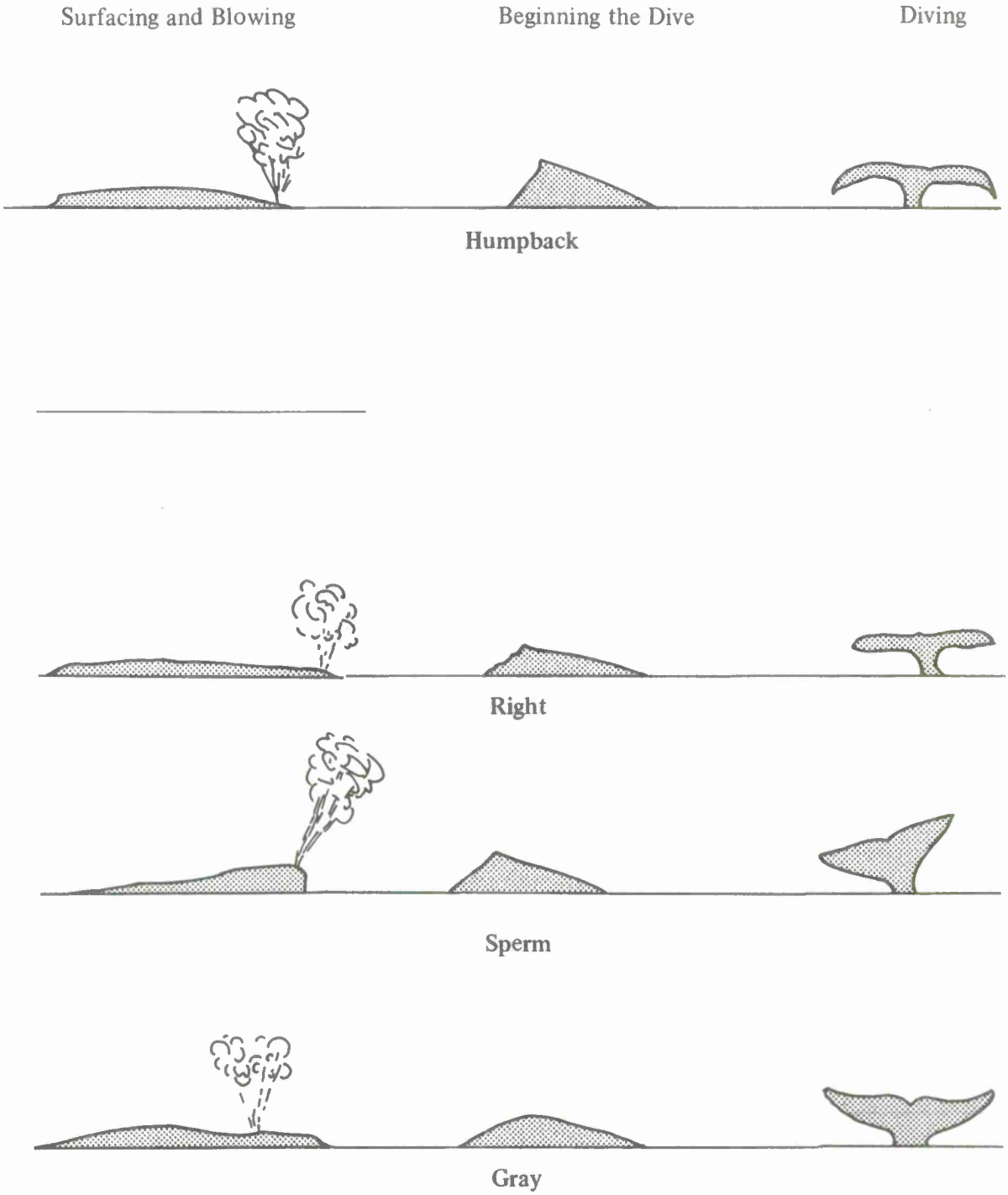
  Body black.
  Head boxlike, makes up 1/3 of body's length.
  Single blowhole on left side of head.
  Blow projects forward obliquely from head.

  Sperm Whale
  (Physeter catadon)
  Section 7

- Body to 50 feet long.

  Body a mottled gray but may appear uniform light gray.
  Head sharply pointed viewed from above.
  Bumps or ridges on top of tail stock.
  Blow low and puffy.
  Distribution primarily coastal.

  Gray Whale
  (Eschrichtius robustus)
  Section 8



Swimming, blowing, and diving characteristics of the humpback, right, sperm, and gray whales.

II. MEDIUM SIZED WHALES (13-40 feet in overall length)

A. With a Dorsal Fin

The animals belonging to this group are so varied that no single, general statement can be made about their differences.

No sketches of these animals are provided because many are too small to present an easily recognized, characteristic profile when surfacing or diving. Detailed examination is frequently necessary for more than a tentative identification.

- Body 40 feet long.

  Body army brown with white blotches underside; back frequently scarred and scratched.
  Head bulbous with long, dolphin-like beak.
  Blow low and indistinct.
  Dorsal fin distinctly triangular.
  Whale may roll sharply when swimming and raise flukes for a dive; often hard to approach.

  → Giant Bottlenose Whale *(Berardius bairdi)* Section 9

- Body 32 feet long.

  Body rust colored (almost red) and splotched with white; large males have white head.
  Dorsal fin small, smoothly back-curved, and located behind the midpoint of the back.

  → Goose-Beaked Whale *(Ziphius cavirostris)* Section 10

- Body 17-32 feet long.

  Dorsal fin small and well back on body.
  Functional teeth in adult males only (lower jaw).

  → All Other Beaked Whales Section 11

- Body 33 feet long.

  Body black or dark gray; undersides of flukes and flippers white; white band on flippers.
  Blow low and indistinct.
  Whale frequently coastal in distribution – curious about boats.

  → Minke Whale *(Balaenoptera acutorostrata)* Section 12

- Body 25 feet long.

  Body black with sharply demarcated white belly and patch above eye; gray saddle behind dorsal fin.
  Body chunky.
  Dorsal fin very tall (sometimes 6 feet).
  Cosmopolitan in distribution.
  Often seen in shallow bays and rivers.

  Killer Whale
  (Orcinus orca)
  Section 13

- Body 22 feet long.

  Body black with light gray area on chest; gray saddle behind dorsal fin.
  Head bulbous.
  Hump on tailstock.
  Flippers long and sickle-shaped.
  Dorsal fin low with very wide base, backcurved, located in front of midpoint of back.

  Short-Finned Pilot Whale
  (Globicephala macrorhyncha)
  Section 14

- Body 18 feet long.

  Body all black.
  Body slender.
  Head tapering, not bulbous.
  Dorsal fin medium height (less than 3 feet) and sharply recurved.

  False Killer Whale
  (Pseudorca crassidens)
  Section 15

- Body 13 feet long.

  Body light gray or white; scarred with numerous scratches.
  Head blunted, not beaked.
  Dorsal fin less than 2 feet; slightly recurved and rather erect.
  Forehead creased fore and aft.

  Gray Grampus
  (Grampus griseus)
  Section 16

II. MEDIUM SIZED WHALES (13-40 feet in overall length). (Continued)

B. Without a Dorsal Fin

There is only one member of this group, the beluga or white whale, *Delphinapterus leucas.* Because of its limited range in the Pacific, however, a detailed description is not included in this key. Several photos are provided.

- Body 16 feet long.

  Adults white, young slate gray.
  Small row of bumps along back ridge in front of tail stock.
  Distributed, usually near coast, from Arctic waters south to Cook Inlet.

  Beluga Whale
  (Delphinapterus leucas)
  Section 17

III. SMALL WHALES AND PORPOISES (less than 13 feet in overall length)

A. With a Dorsal Fin

The species in this group are not discussed in order of length. Instead, each one is grouped with those animals with which it is most likely to be confused in the field.

- Body 8 feet long.

  Body gray to dark gray with spotting.
  Distribution tropical.

  Spotted Porpoise
  (Stenella sp.)
  Section 18

- Body 7 feet long.

  Body gray; belly white.
  Dorsal fin triangular and very erect.
  Jumps and spins on longitudinal axis.
  Distribution tropical.

  Spinner Porpoise
  (Stenella sp.)
  Section 19

- Body 10 feet long.

  Back bluish, sides gray, belly gray or white; two distinctive streaks from front to back down each side.
  Distribution tropical extending to temperate waters.

  Striped Dolphin
  (Stenella caeruleoalba)
  Section 20

- Body 7-1/2 feet long.

  Body brownish gray to black; belly or chest white; hourglass pattern of color on sides.
  Distribution primarily temperate but extends into tropics (near shore).

  White-Bellied Porpoise
  (Delphinus delphis)
  Section 21

- Body 7 feet long.

  Body mostly black; sides white; two white stripes on back from head to near tail.
  Snout very blunt.
  Dorsal fin sharply backcurved and pointed at tip; appears hooked.

  Pacific White-Sided Dolphin
  (Lagenorhynchus obliquidens)
  Section 22

- Body probably 6-7 feet long.

  Looks like cross between white-bellied porpoise and white-sided porpoise.
  No distinctive beak.
  Dorsal fin and flippers small.
  Distribution tropical.

  Fraser's Porpoise
  (Lagenodelphis hosei)
  Section 23

- Body 7 feet long.

  Body black; very white belly and flank patch; white areas on dorsal fin and near margin of flukes.
  Dorsal fin small and triangular.
  Very vigorous and fast swimmer; splashes considerably.

  Dall's Porpoise
  (Phocoenoides dalli)
  Section 24

- Body up to 5 feet long.

  Body brown above and white below.
  Head round; beak small and indistinct.
  Dorsal fin short and rounded.
  Generally found inshore; does not approach boats.

  Harbor Porpoise
  (Phocoena phocoena)
  Section 25

- Body 7-1/2 feet long.

  Body purplish black on back with yellow white blotches on the side; belly is white; body frequently scarred with numerous white streaks.
  Head tapers gradually; beak is long and slender and there is no separation of the beak from the forehead.

  → **Rough-Toothed Dolphin** *(Steno bredanensis)* Section 26

- Body 12 feet long.

  Body gray to almost black; belly region lighter.
  Snout quite stubby.
  Dorsal fin fairly tall and backcurved.
  Often found very close to shore.

  → **Bottlenose Dolphin** *(Tursiops truncatus)* Section 27

- Body 8-9 feet long.

  Body jet black with white belly patch.
  Head rounded; no beak.
  Dorsal fin 1-2 feet tall and located near center of body.

  → **Pygmy Killer Whale** *(Feresa attenuata)* Section 28

- Body 13 feet long.

  Head blunt.
  Dorsal fin small and in last 1/3 of body.
  Blowhole on left side of head.
  Mouth shark-like.

  → **Pygmy and Dwarf Sperm Whales** *(Kogia sp.)* Section 29

III. SMALL PORPOISES (less than 13 feet in overall length). (Continued)

B. Without a Dorsal Fin

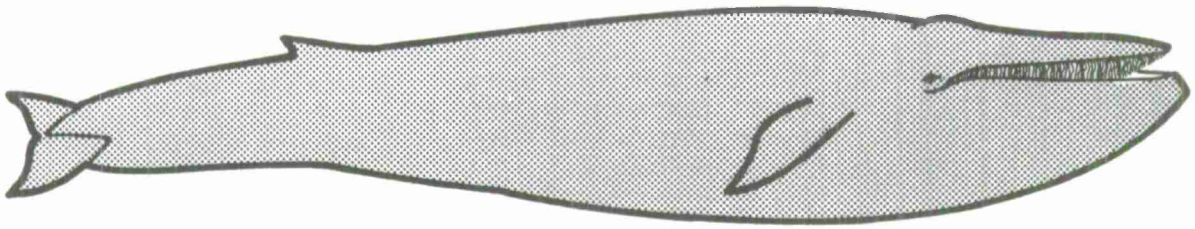
There is only one porpoise-sized cetacean in the eastern Pacific which has no dorsal fin.

- Body 9 feet long.

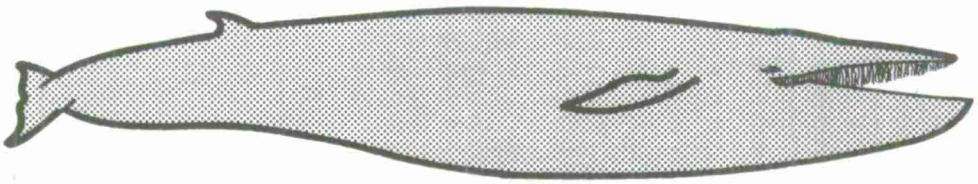
  Body black or brownish black; belly has white hourglass pattern.
  Body long and slender.
  Beak indistinct.
  Often jumps in low-profile leaps.

  → **Northern Right Whale Dolphin** *(Lissodelphis borealis)* Section 30

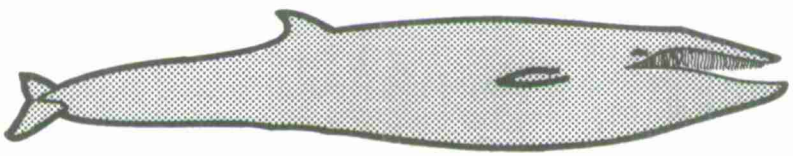
LARGE WHALES WITH A DORSAL FIN



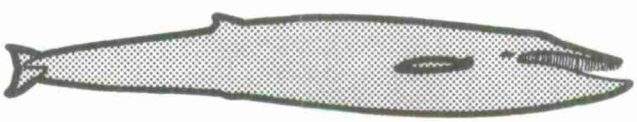
Blue Whale *(Balaenoptera musculus)*



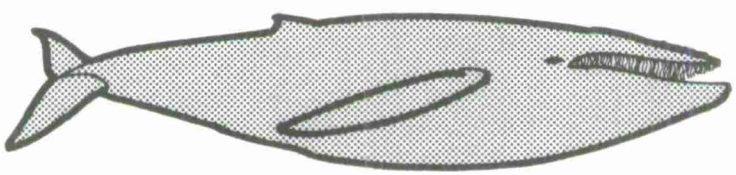
Fin Whale *(Balaenoptera physalus)*



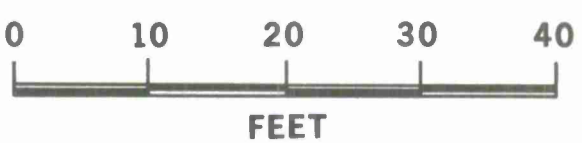
Sei Whale *(Balaenoptera borealis)*



Bryde's Whale *(Balaenoptera edeni)*



Humpback Whale *(Megaptera novaeangliae)*



Though the entire body of the larger whales is completely visible only when the animals are beached, these full-body silhouettes are provided to help the reader visualize the entire animal, seldom visible to him at sea.

SECTION 1. BLUE WHALE

Balaenoptera musculus Linnaeus, 1758

DESCRIPTION

Blue whales are the largest animals ever to live on earth. Antarctic blue whales may reach a length of 98 feet and weight of over 150 tons. North Pacific blues reach a length of about 85 feet. In both populations, females are somewhat larger than males of the same age.

Blue whales are bluish gray overall, mottled with gray or grayish white. The flippers are white below; the baleen is black with black fringes, very broad at the base, and less than 3 feet long. Viewed from above, the blue whale's rostrum is broad and U-shaped. The head in front of the blowhole is very broad and flat. The blow or spout is tall and vertical.

The dorsal fin is very small (8-13 inches), triangular, and located in the third of the back nearest the tail.

On the underside, the throat grooves, which are found on all the rorquals, extend from near the tip of the lower jaw back past the umbilicus (navel).

Blue whales feed almost exclusively on "krill".

MAY BE CONFUSED WITH

Blue whales may be most often confused with finback whales and though the two species are difficult to distinguish from a distance, the following key differences permit identification at close range:

Blue		Fin
Mottled bluish gray above and below	**Coloration**	Uniform gray above, white underneath
Broader, U-Shaped	**Head**	Narrower, V-Shaped
8-13 inches, triangular	**Dorsal Fin**	14-21 inches tall, backcurved
Usually found singly or in pairs	**Grouping**	Often found in "pods" of 6-7 individuals; many pods may be found in small area

Blue	(Continued)	Fin
Dive for 10-20 minutes; surface and blow 8-15 times, making a series of 12-15 second dives; then dive again. Often show flukes on dive.	**Diving**	Dive for 6-7 minutes, blow 4-7 times; rarely show flukes on dive

DISTRIBUTION

Blue whales are distributed from the Aleutian Islands south at least to the waters off Mexico. They are found off Baja California from February through July, sometimes as close as 3 kilometers to the shore, and also have been reported from the mouth of the Gulf of California and off Islas Tres Marias, Nayarit, Mexico. The majority of the population migrates north in May, passing outside the California Channel Islands far offshore Central California and arriving off Vancouver in July or August. From there, many of the animals move to concentrating areas in (1) the eastern Gulf of Alaska, between 130 and 140°, and (2) in the area southeast of the Aleutians. Blue whales are rarely found in the Bering Sea. With the arrival of winter in the North Pacific, they reverse the migration routes and return to their tropical and subtropical grounds.

The seasonal shift of this stock of whales to the north in summer and to the south in winter is fairly typical of the baleen whales.

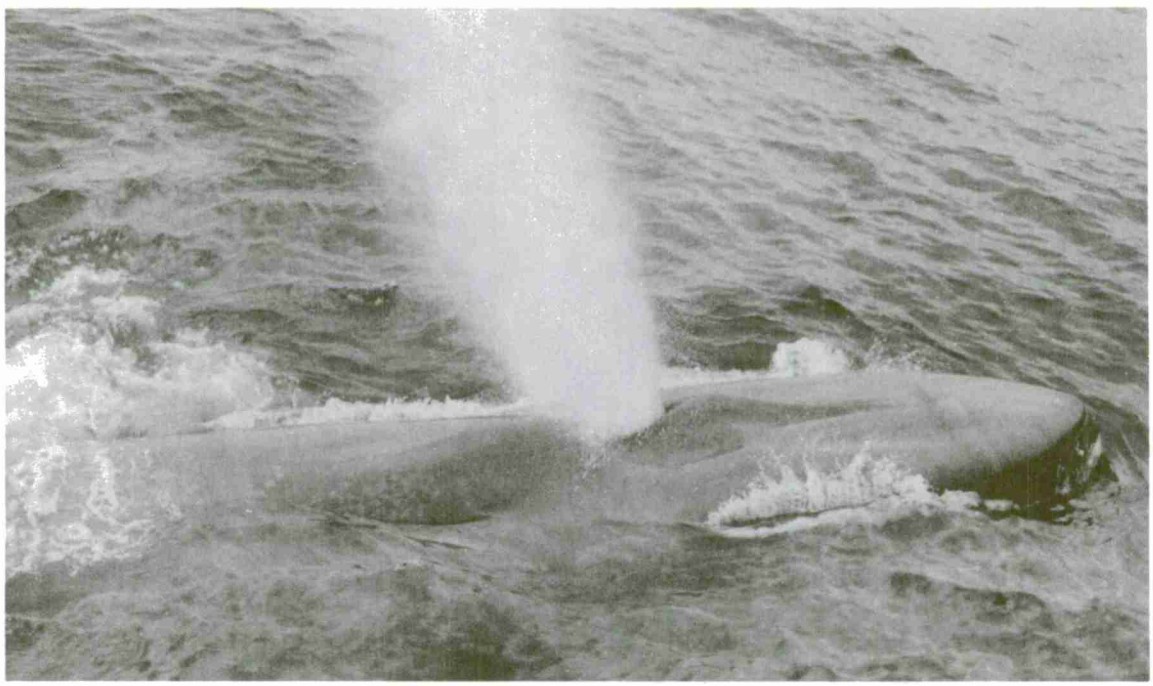


Figure 8A. A Sequence Showing the Blow of a Blue Whale. Note the broad, rounded appearance of the head and the black baleen. The whale is exhaling. (photograph by R. G. Gilmore)

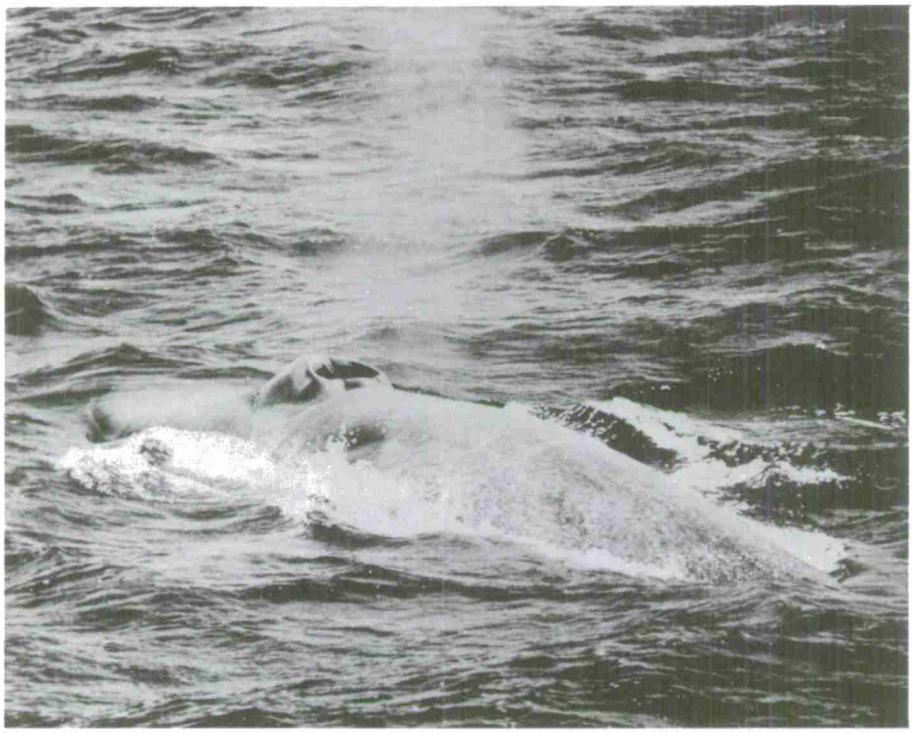


Figure 8B. A Sequence Showing the Blow of a Blue Whale. The two blowholes are completely open. (photograph by K. C. Balcomb)

Figure 8C. A Sequence Showing the Blow of a Blue Whale. The animal has completed his blow, has inhaled, and is about to dive. (photograph by S. Leatherwood)

Figure 9. The back of a blue whale shortly after completion of the blow and just prior to the start of a dive. The dorsal fin is not yet visible. A spaghetti tag is visible on the right back. (photograph by S. Leatherwood)

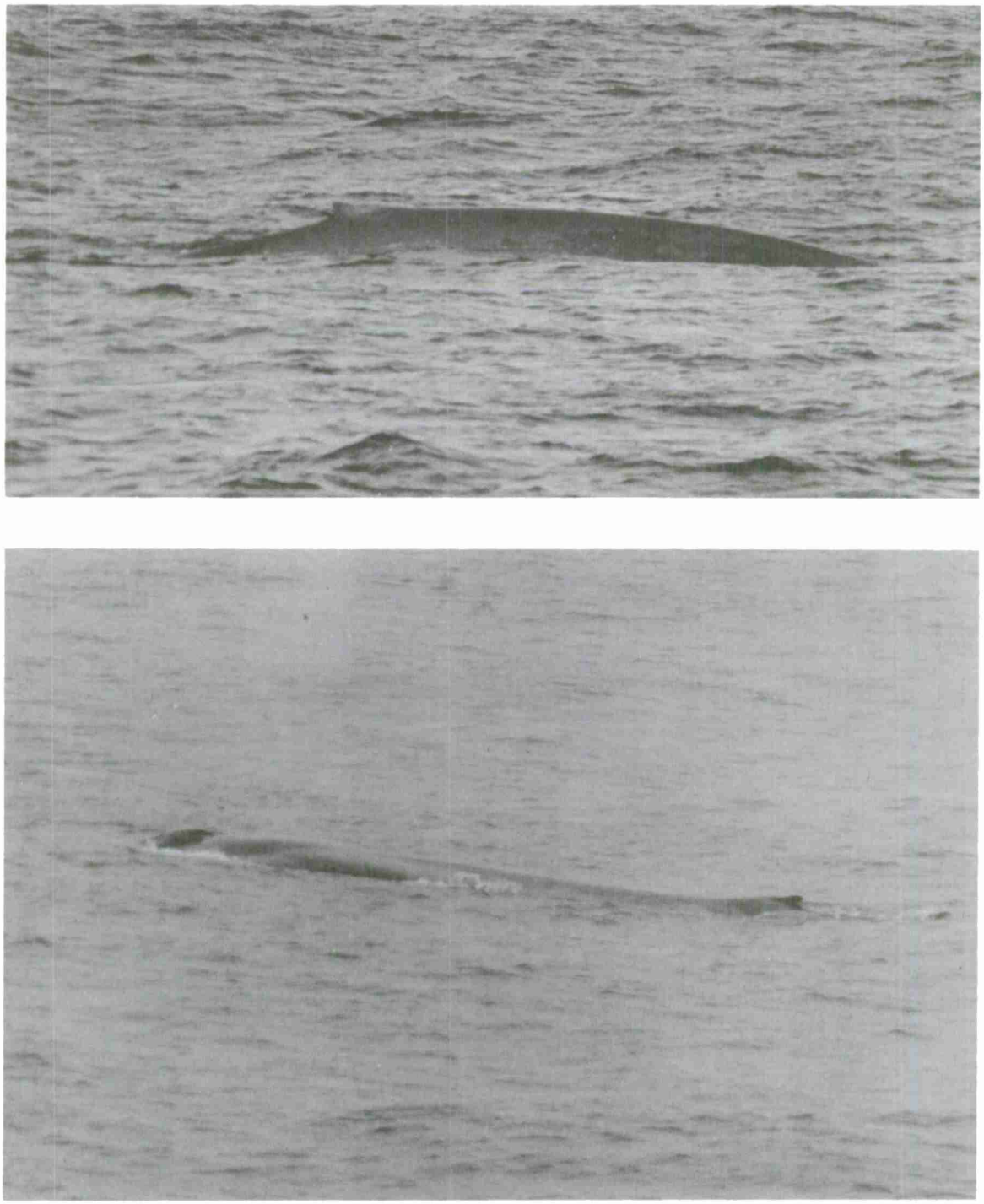


Figure 10. These two photos of a 75-foot blue whale off San Clemente Island clearly show the very small size of the dorsal fin and its position well back towards the tail. (photographs by S. Leatherwood)

SECTION 2. FIN WHALE

Balaenoptera physalus Linnaeus, 1758

DESCRIPTION

Fin whales reach a length of at least 70 feet. Individuals are gray on the back and sides with none of the mottling present on the blue whale, and are rarely as heavily scarred as sei whales. The undersides, including the undersides of the flippers and flukes, are white. On the head the dark color is asymmetrical, reaching further down on the left than on the right side. The lower lip and the right front baleen are white. The remainder of the baleen is striped with alternate bands of yellowish white and bluish gray. The fringes of the baleen plates are grayish white.

The rostrum is narrower and more V shaped than on the blue whale. The dorsal fin of the fin whale is from 14 to 21 inches tall, is slightly backcurved, and is located in the last third of the back. The parallel throat grooves reach beyond the navel.

Fin whales, also known as finback whales, are one of the most common baleen whale species in the world and constitute a major portion of the whaling catch. They are reportedly one of the fastest of the big whales (sei whales may be slightly faster) reaching speeds in excess of 20 knots, and were not an important commercial species until the comparatively recent development of fast catcher boats.

Fin whales eat a wide variety of foods including squid, euphausids (krill), capelin, herring, and lantern fish.

MAY BE CONFUSED WITH

Fin whales may be confused with blue whales and with sei whales. They may be distinguished from the blues by differences in coloration, size and position of the dorsal fin, and shape of the head (discussed in detail under the section on the blue whale). They may be distinguished from sei whales in the following similar ways:

Fin		Sei
14-21 inches tall; slightly backcurved	**Dorsal Fin**	17-28 inches tall; sharply backcurved
Rise obliquely so that the top of the head breaks the surface first. After blowing, the animal arches its back and rolls forward, finally exposing the dorsal fin.	**Surfacing**	Rises to surface horizontally so that dorsal fin and head are visible simultaneously. When starting a dive does not arch the back as much as the fin whale.

Fin	(Continued)	Sei
Tall, inverted cone (point down)	**Blow**	Similar but smaller
Usually blows 4-7 times and dives out of view for 6-10 minutes. Rarely shows tail flukes when starting a dive.	**Diving**	Blows 1-2 times and dives for 1-2 minutes, often swimming along only slightly submerged leaving "tracks" or swirls on the water surface. Rarely shows its tail flukes when making a dive.
White	**Color of Undersides**	Mostly gray
White on right side, gray on left	**Color of Lower Lip**	Gray

Fin whales frequently occur in pods of 6 or 7 individuals and many of those pods may be distributed in a relatively small area.

DISTRIBUTION

Fin whales are widely distributed in the Pacific Ocean. Their winter grounds are poorly known; they have been reported at least from the Big Sur area off the Central California coast south to Cabo San Lucas, though they are apparently most abundant around the California Channel Islands. They have also been reported far at sea, so are apparently quite widely distributed in winter. During the summer, they are found in the immediate offshore waters around the North Pacific as far south as Baja California. In the spring and summer, they are probably the most abundant of the large baleen whales off California, reaching a peak in May or June.

Fin whales have also been reported from the Gulf of California, and at least one researcher considers the population there year-round residents.

Figure 11. A small group of fin whales surfaces to breathe. Fin whales may be found in groups of up to 60 or 70 individuals. (photograph by Gordon D. Pike courtesy of Ian MacAskie)

Figure 12. In this dramatic photo of a finback whale seemingly on a collision course with the photographer's vessel, the wide V shape of the head is clearly visible. (photograph courtesy of Ian MacAskie)

Figure 13. Two fin whales roll on the surface of the water to breathe, exposing the entire back. Note the size and shape of the dorsal fin. (photograph by K. C. Balcomb)

SECTION 3. SEI WHALE

Balaenoptera borealis Lesson, 1828

DESCRIPTION

Sei whales reach a maximum length of 52 feet. They are gray on the back, with some white on the front belly, though the white does not extend onto the chin or past the throat grooves. The baleen plates are uniform black with grayish-white fringe. The body usually has a "galvanized" appearance due to scars resulting from lamprey bites. Neither the flippers nor the tail flukes are white underneath. The snout is more acutely pointed than the finback's but when viewed from the side is slightly arched.

The blow of sei whales is not generally high, and usually neither the flukes or the tail stock are arched high when the animal begins a dive.

MAY BE CONFUSED WITH

The sei whale's smaller size and taller, more curved dorsal fin should prevent confusion with the blue whale. At a distance, however, it is difficult to distinguish from the fin whale. The primary cues are the differences in blowing and diving characteristics and the higher, more falcate dorsal fin of the sei whale (discussed under the section on the fin whale). Up close, other features, including the color of the undersides and the absence in the sei of white coloration on the right side of the lips, may be used for distinguishing between the two species. Sei whales might also be confused with Bryde's whales but the two species share a limited common range off Baja California, only during winter months.

DISTRIBUTION

The distribution of the sei whale is rather poorly known. The summer range extends from Alaska south to the California Channel Islands, though the animals are rarely found north of the Aleutian Islands. Sei whales may be found off central California in late summer or early fall and in the winter appear to move south and further offshore. Details of its distribution and migration, however, are not clearly known.

Figure 14. The dorsal fin of the sei whale, more prominent than that of the other large whales, and the basic coloration are visible in this photo of a museum model. (photograph and model by P. F. Brodie)

SECTION 4. BRYDE'S WHALE

Balaenoptera edeni Anderson, 1878

DESCRIPTION

Bryde's whales reach a maximum length of approximately 45 feet. The dorsal fin and color of the back are very similar to those of the fin whale. The dorsal fin is from 2 to 3 feet, slightly falcate, and located in the last 1/3 of the body. The back is dark gray. But the most distinctive field mark of the Bryde's whale is the pair of ridges found on the top of the head; these ridges begin near the tip of the rostrum and extend back as far as the blowhole. They are visible only at very close range. Bryde's whales, like minke whales, reportedly approach close to vessels, as if curious about them.

MAY BE CONFUSED WITH

Though sei and Bryde's whales are similar in size and general appearance, the fact that they share a common range off Baja California only during a limited period in the winter months lessens the likelihood that the two will be mistaken. Bryde's whales are more likely to be confused with fin whales and must be examined at rather close range to be distinguished. In addition to the ridges on the back of the head, the fin's larger size, and the fact that fin, unlike Bryde's, seldom exhibit curiosity about boats may be helpful in distinguishing a Bryde's when you see it. Note also the rather limited range of this species.

DISTRIBUTION

Bryde's whales are found in the inshore waters of the Pacific coast of Baja California, from just north of Magdalena Bay to Cabo San Lucas, and range across the mouth of the Gulf to Mazatlan, Sinaloa, and up into the Gulf, though they may not be very abundant in the Gulf. No migration of this species is known and they are presumed to be year-round residents in this range.

Figure 15. A finback or Bryde's whale in Canal de Ballenas, just west of Isla Angel de la Guardia in the north end of the Sea of Cortes. Since, apart from size, the primary differences between these two species are very subtle ones, they will often be impossible for the layman to tell apart. (photograph by W. C. Cummings)

SECTION 5. HUMPBACK WHALE

Megaptera novaeangliae Borowski, 1781

DESCRIPTION

The most distinctive features of humpback whales are the head, the flippers, and the dorsal fin. The head in front of the blowhole is flattened; but here as well as on the lower jaw there are many knoblike protuberances. Humpbacks always carry many barnacles and whale lice. The flippers are very long (nearly 1/3 as long as the body) are scalloped at least on the leading edge, and are nearly all-white. The dorsal fin, situated 2/3 of the way back on the body, is small, hooked, and highly variable in shape.

Humpback whales reach a maximum length of about 50 feet. They are basically black in color with a white region of varying size on the belly and the underside of the flippers. The tail flukes are often white below and have an irregular or rippled back margin. The baleen is short (less than 3 feet) and black.

Humpback whales often leap clear of the water, raise a flipper and slap it against the water, or raise the tail high in the air and bring it crashing back to the water in a loud report. Though their primary food is krill, humpbacks may also eat fish.

MAY BE CONFUSED WITH

At a distance, humpbacks may be confused with any of the other large rorquals (blue, fin, sei, Bryde's). At fairly close range, however, their many highly distinctive characteristics make misidentification unlikely.

DISTRIBUTION

In the eastern Pacific, humpback whales are widely distributed from Alaska south at least to mainland Mexico. Though individuals may be seen in virtually any part of the range during the summer, the bulk of the population migrates along regular routes to spend winter in the calving and breeding grounds of the warmer waters – near tropical coastlines and tropical oceanic islands. In the eastern North Pacific, breeding grounds are found (1) off Hawaii, (2) off the western coast of Baja California, from Cedros Island to Cabo San Lucas, and in the Gulf of California at least as far as Isla San Jose, (3) off the coast of Nayarit and Jalisco, Mexico, chiefly from Banderas Bay to Islas Tres Marias, and (4) near such offshore islands as San Benedicto, Soccorro, and Clarion.

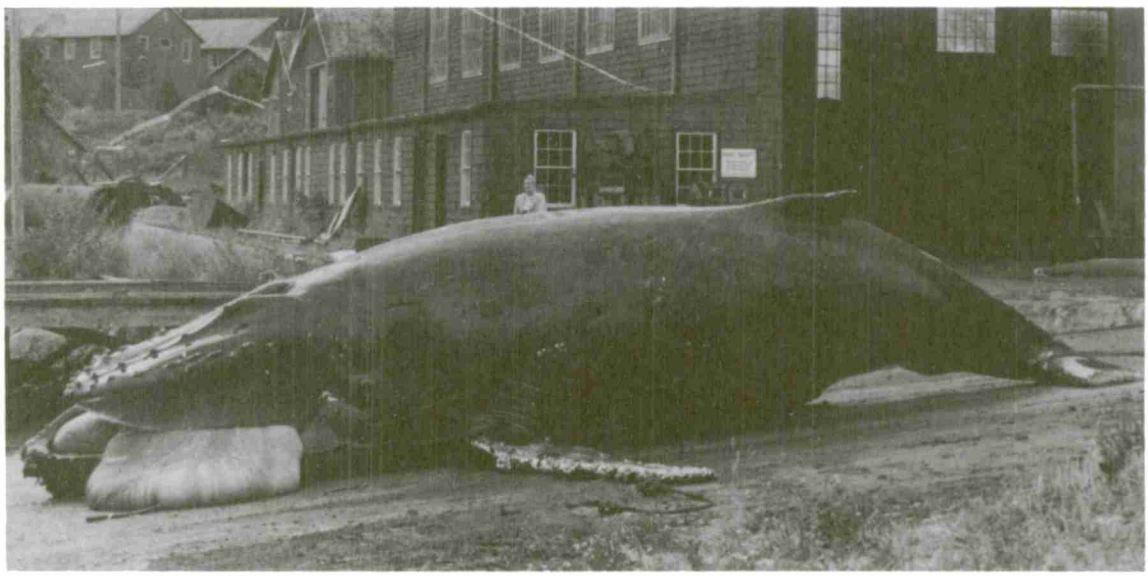


Figure 16. A humpback whale on the deck at a whaling station. All of this species' most distinctive characteristics are evident in this photo: (1) the irregularly shaped dorsal fin, (2) the knobs on the top of the snout, and (3) the long barnacle-covered flipper, scalloped along the front edge. (photograph by G. C. Pike courtesy of Ian MacAskie)

Figure 17. Two humpback whales off Bahia San Quentin, Baja California. Even though the back of this animal is all that is visible, the extremely irregularly shaped dorsal fin makes identification possible. (photograph by K. C. Balcomb)

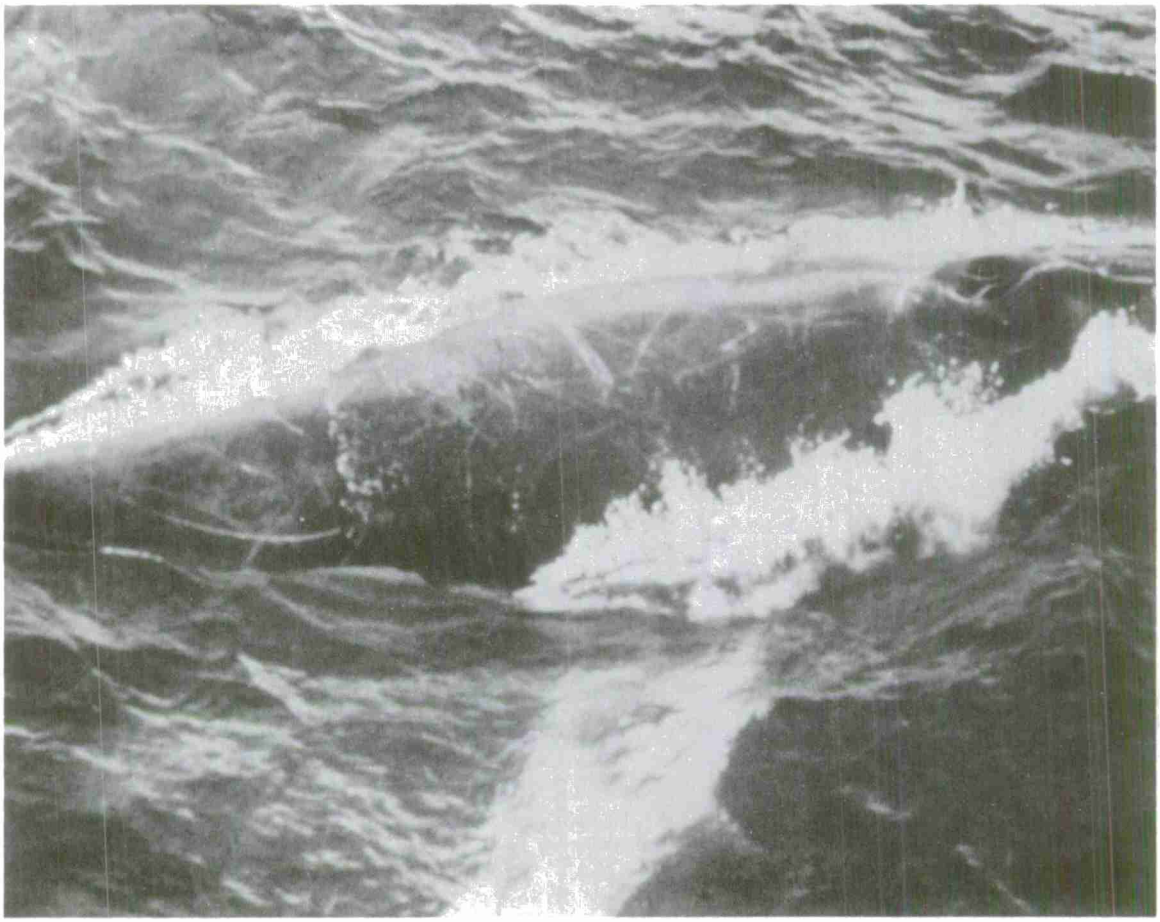


Figure 18. When they are seen up close, humpback whales can be distinguished from all other whales by their extremely long, nearly all-white flippers. In this picture, note the separate openings of the blowhole, a characteristic which identifies this as a baleen whale. (photograph by W. C. Cummings)

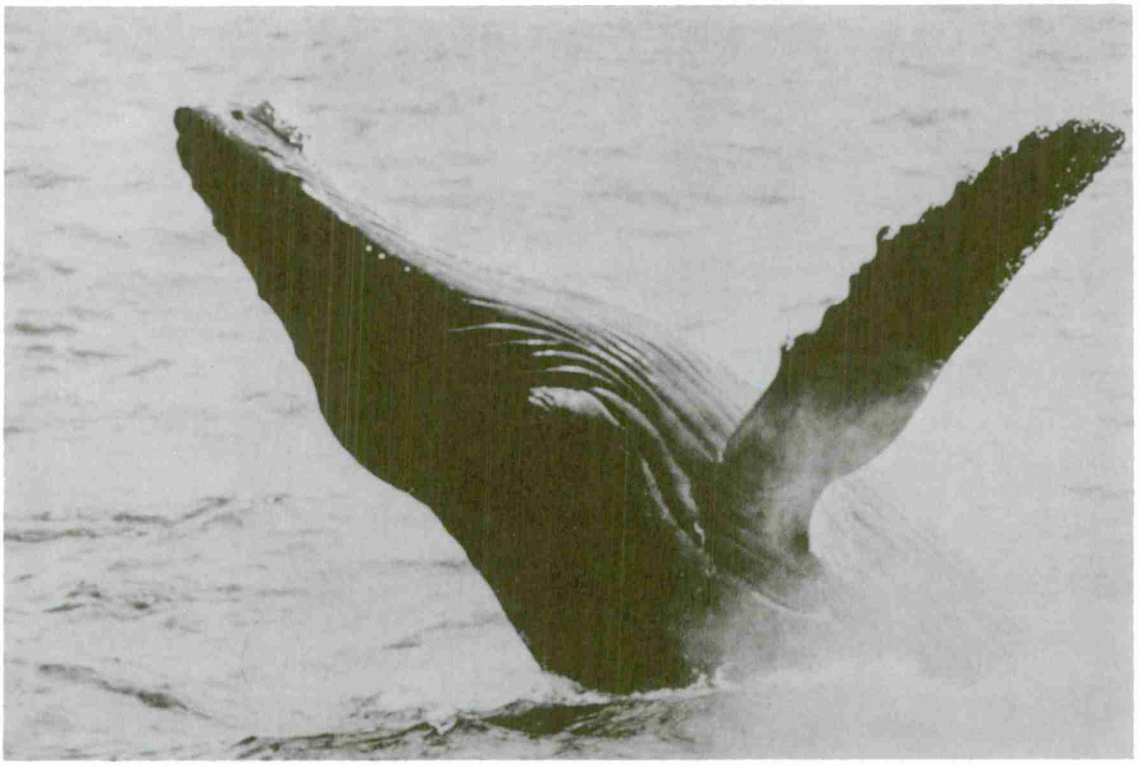
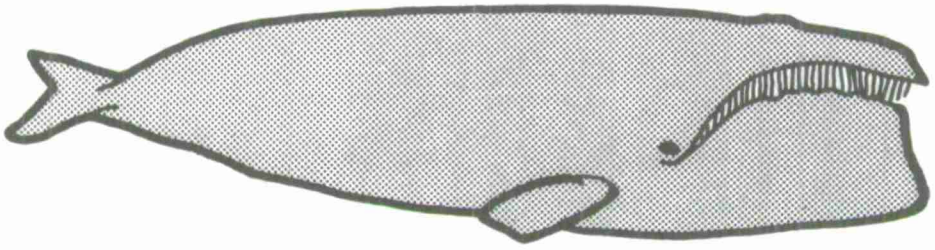


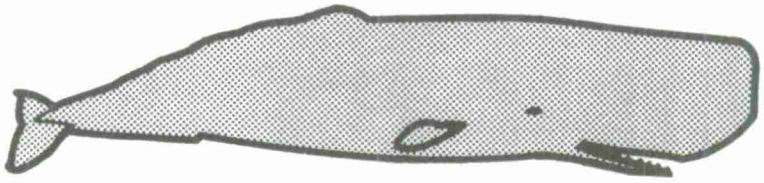
Figure 19. A humpback whale falls back toward the water after breaching near Bahia San Quentin, Baja California, Mexico. These whales frequently jump or raise the flukes or flippers and slap them very hard against the water. The long scallopped flippers, the knobs on the head, and the throat grooves are clearly visible in this picture. Also note the cluster of barnacles on the lower jaw. (photograph by K. C. Balcomb)

Figure 20. The humpback is the only large whale with a dorsal fin which regularly raises its flukes when beginning a dive. When it does, the irregular surface of the trailing edge is often visible. (photograph by K. C. Balcomb)

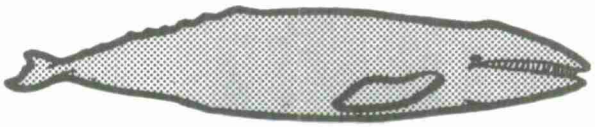
LARGE WHALES WITHOUT A DORSAL FIN



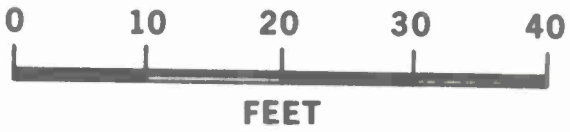
Right Whale *(Balaena glacialis)*



Sperm Whale *(Physeter catadon)*



Gray Whale *(Eschrichtius robustus)*



These full-body silhouettes are provided to help the reader visualize the entire animal.

SECTION 6. RIGHT WHALE

Balaena glacialis Linnaeus, 1758

DESCRIPTION

Pacific right whales have a blow as distinctive as the sperm whale's. It projects upward from the body to either side as two separate spouts in a wide V.

Its rostrum is low, narrow, and arched. There are bumps or "bonnets" on the upper surface of the head just in front of the blowhole. There is no dorsal fin.

The body is all black or charcoal gray except for a white region, of varying size, on the belly. The baleen is long (6-9 feet), thin, and all black.

Earlier this century, this slow swimming whale was nearly exterminated by hunters who took advantage of its slow speed and the fact that its carcass floats to harvest these animals for their great yield of whalebone and oil. It was these characteristics which prompted whalers to dub these animals the "right" whales to kill (as opposed to the ones that were too fast to catch and sank when killed).

MAY BE CONFUSED WITH

At a distance, right whales may be confused with gray whales. When closer examination is possible, however, they may be easily distinguished from grays by the characteristic V-shaped blow, and the smooth black back. The blow of a gray is less distinctive and its mottled gray back sports a series of dorsal humps or ridges.

DISTRIBUTION

The distribution of right whales is poorly known. When they were still a prime quarry of whalers, they were most frequently found in the summer on the "Kodiak Ground" from Vancouver Island throughout the Gulf of Alaska to the eastern Aleutians and even into the Bering Sea, and during winter females with calves were known to resort to coastal bays and inlets. In recent years they have been seen from the northern gulf of Alaska as far south as Punta Abreojos, Baja California, but they are very rare. The population of right whales, like that of most of the baleen whales, probably shifts northward in summer and southward in winter.

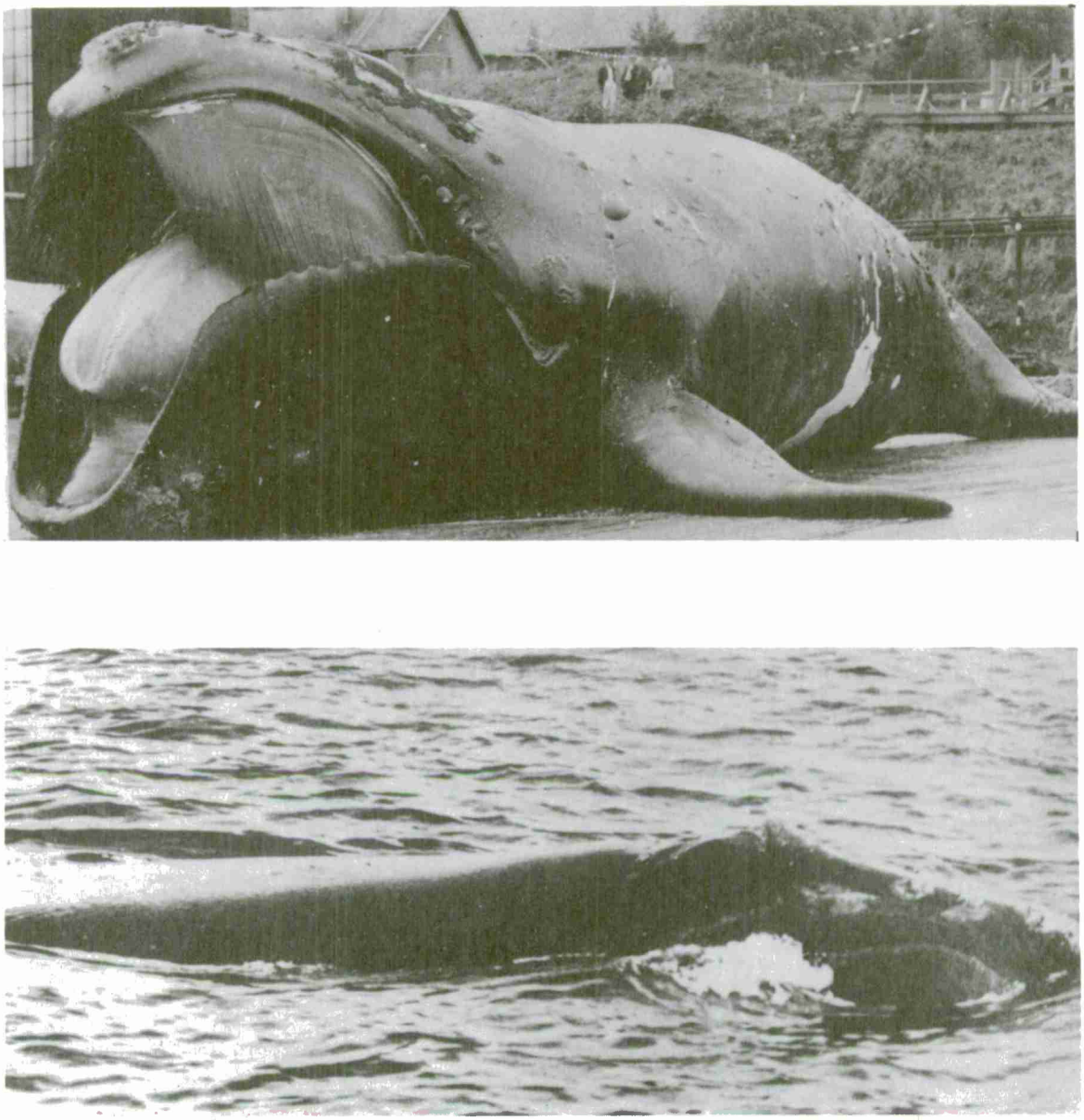


Figure 21. The high, arching lower lips are clearly visible on both this right whale on the ramp at a whaling station (top) and on this swimming right whale (bottom). Also note the bonnets and barnacles on the rostrum. (photographs by G. C. Pike courtesy of Ian MacAskie, top, and W. E. Scheville, bottom)

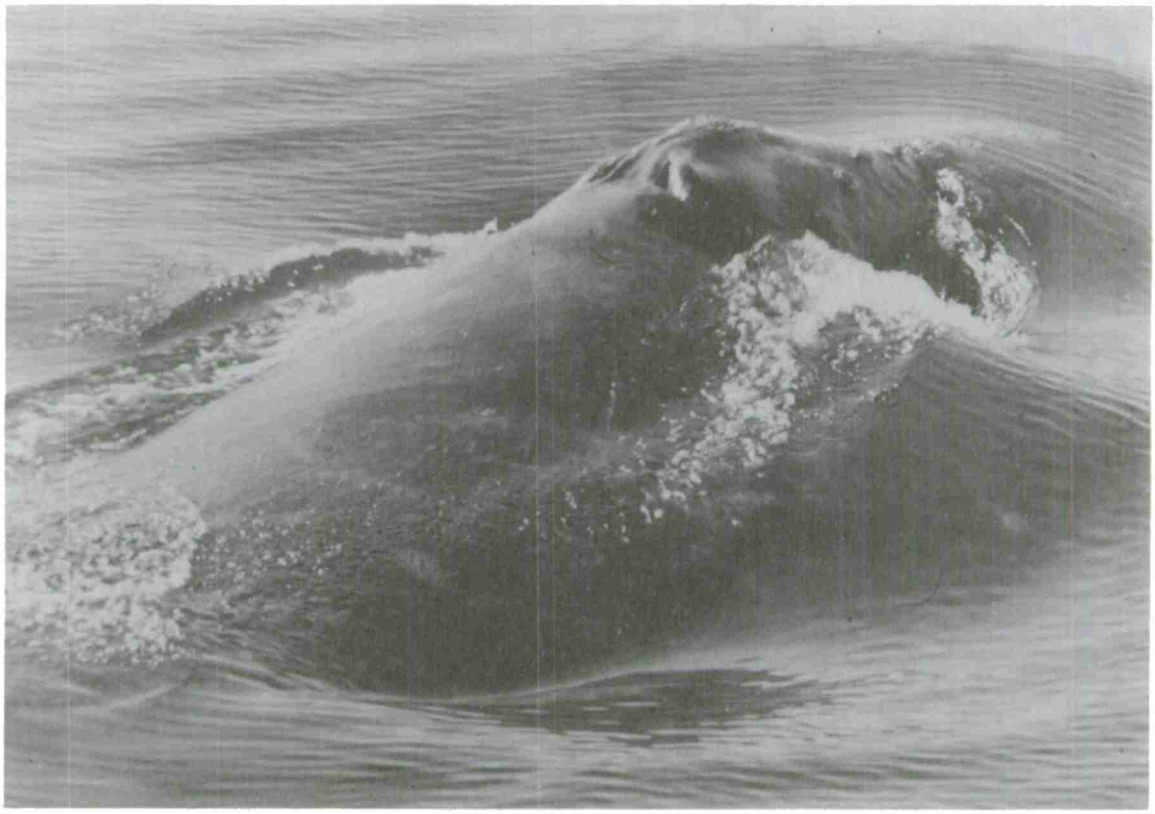


Figure 22. As this right whale surfaces to breathe off Punta Abreojos, Baja California, Mexico, its widely separated blowholes are easily seen. (photograph by Dale W. Rice)

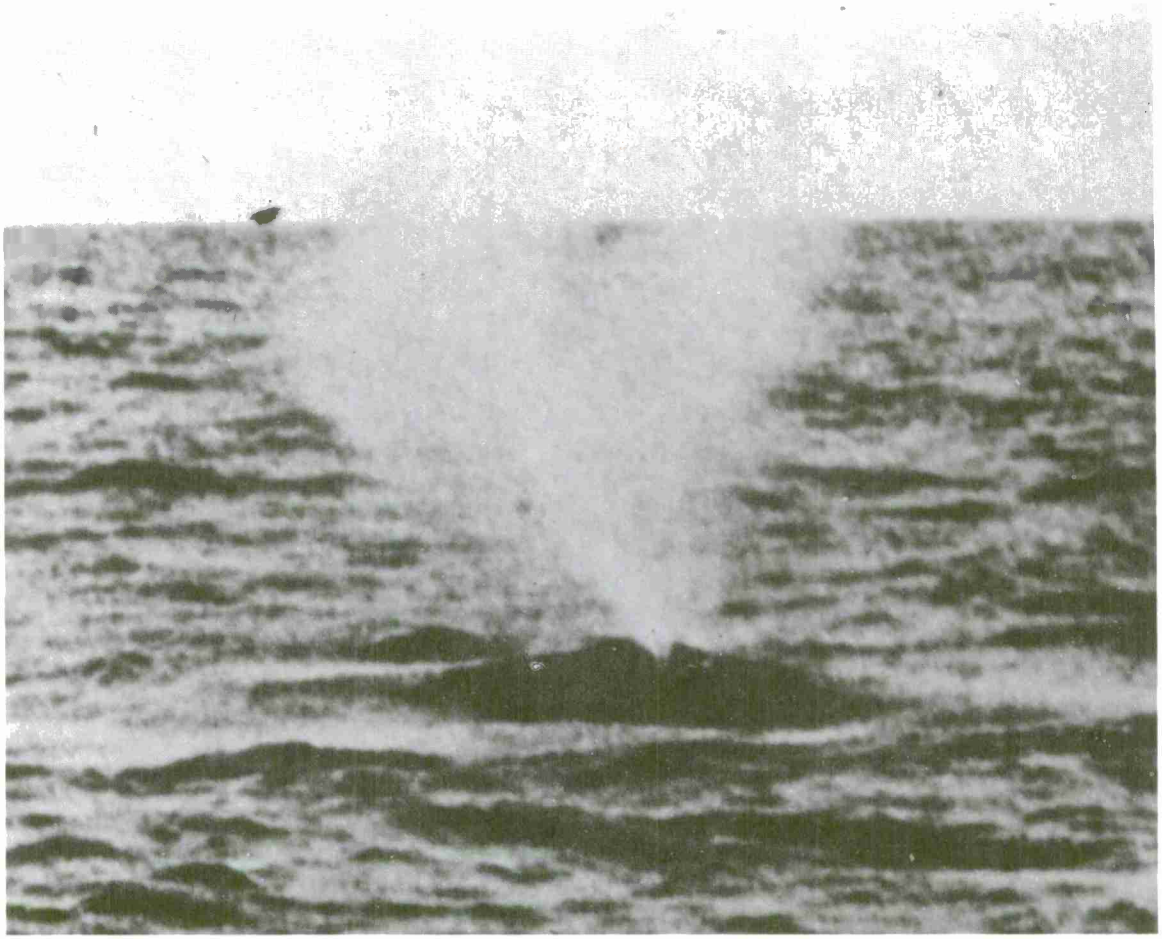


Figure 23. The right whale's blow is a wide V shape with two distinct spouts. (photograph by W. E. Schevill)

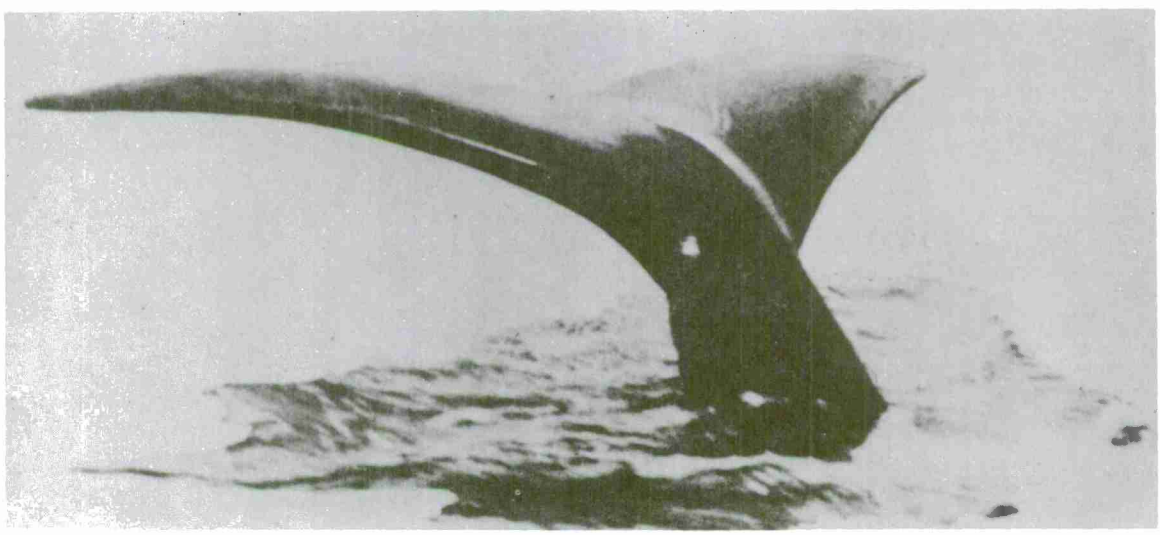


Figure 24. Right whales, like sperm, gray, and humpback whales, frequently expose the flukes when beginning a dive. (photograph by W. E. Schevill)

SECTION 7. SPERM WHALE

Physeter catodon Linnaeus, 1758

DESCRIPTION

A sperm whale is one of the easiest whales to identify at sea, even when comparatively little of the animal is visible. It has a huge head which comprises nearly 1/3 of its total length. The blowhole is located well to the left of the midline and far forward on the head. The spout or blow emerges at a sharp forward angle.

There is a distinct dorsal hump and a series of scallops along the top of the tail just behind it. There is a ventral keel on the tail as well, which may be visible as the animal sounds. The entire body has a rippled or shriveled appearance. The belly and chin are often white or light gray. The tail flukes are very broad and thick.

Male sperm whales may reach a length of 60 feet, though individuals larger than 50 feet are rare. Females are smaller, rarely exceeding 38 feet.

Sperm whales may be found singly or in groups of up to 35 or 40 individuals.

MAY BE CONFUSED WITH

Because of their very distinctive head shape, blow, and black ridged back, sperms are unlikely to be confused with any other species.

DISTRIBUTION

Sperm whales are widely distributed in the North Pacific. During the winter, they are generally below 40°N latitude and breeding aggregations are frequently seen off the continental slopes of California. They have been seen, though not in great abundance, off Baja California and Mexico, and probably occur further south. Individuals have been seen off Clipperton Island in winter.

During the summer sperm whales may be found anywhere in the North Pacific, though the major grounds are in the southwestern Bering Sea and the northern Gulf of Alaska. Very few are found off southern California, and virtually none south of San Diego. Data from the whaling industry suggests that they move west through the whaling grounds off San Francisco in the spring and return south in the autumn.

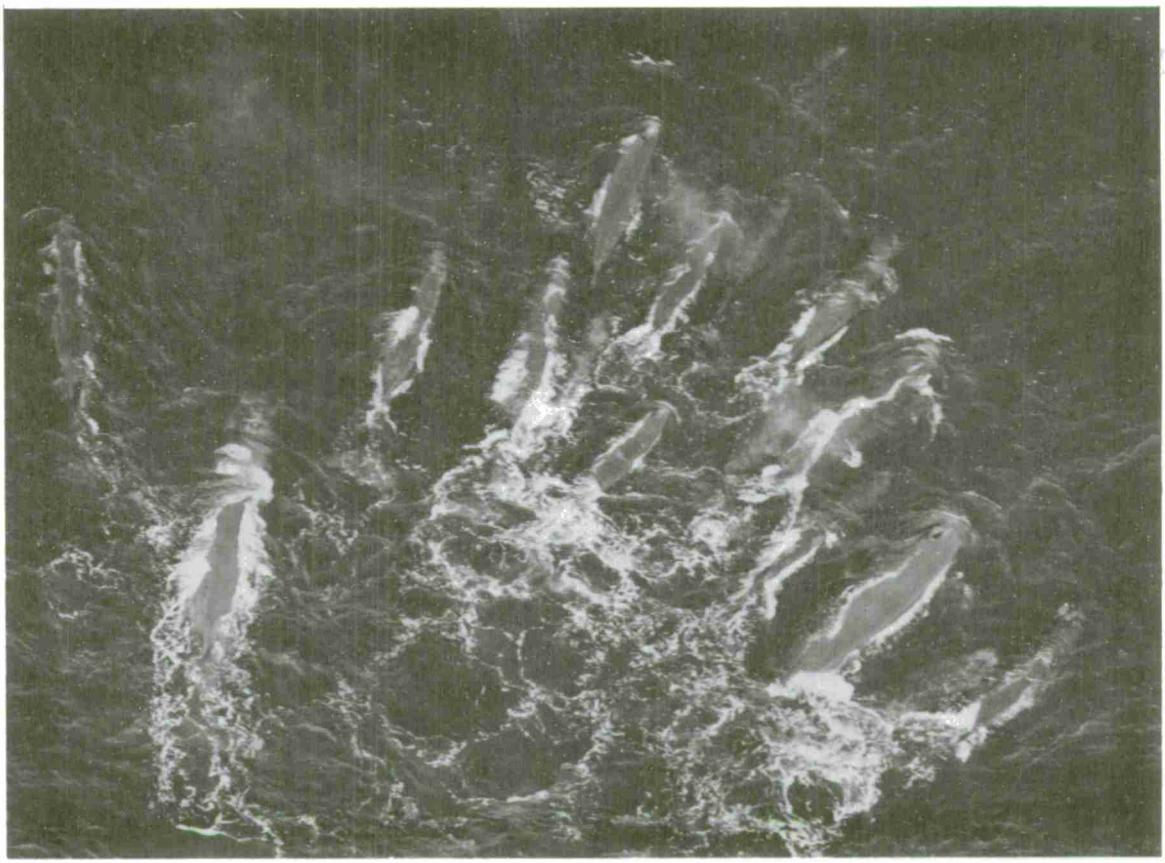


Figure 25. An aerial photograph of a harem school of female sperm whales with young and at least two large males. Even from this altitude, the position of the blowhole marks this animal unmistakably as a sperm whale. (photograph by Japanese Whale Research Institute)

Figure 26. Note that the blow projects obliquely forward from the head of this large bull sperm whale off Central California. (photograph by Dale Rice)

Figure 27. The sperm whale, the species to which the famed white whale of literature, Moby Dick, belonged, is easily identified by its long squarish head and by the fact that its blowhole is located on the left front of the head so that its blow projects obliquely forward. (photograph by W. C. Cummings)

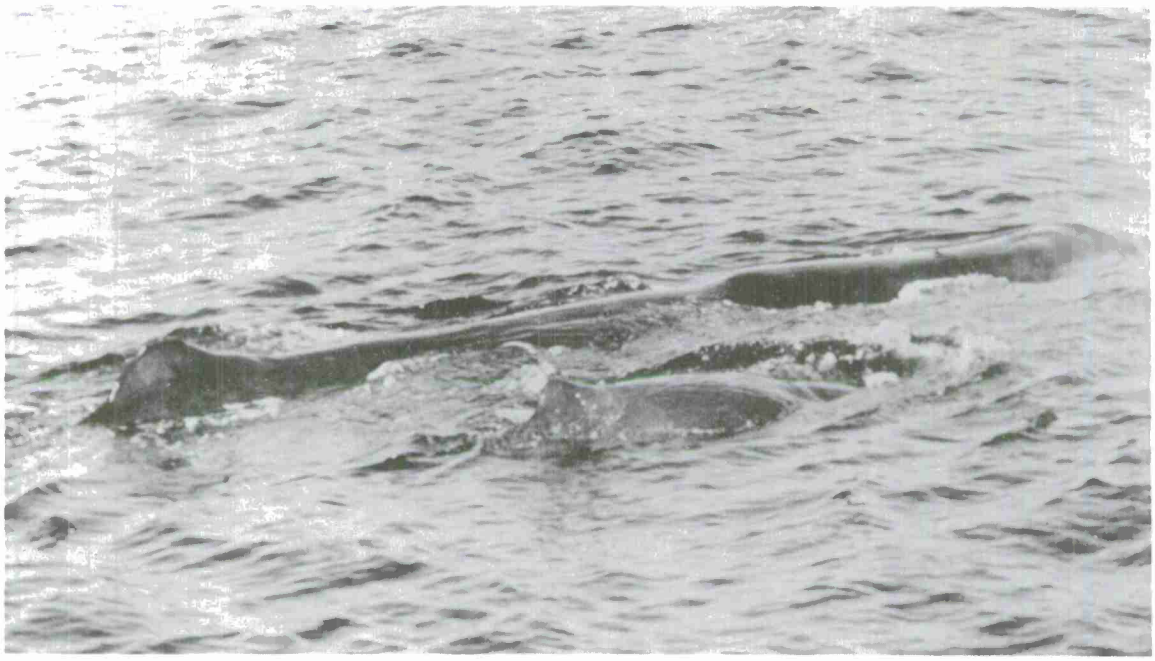


Figure 28. A sperm whale mother and calf showing the rather distinct dorsal hump and the very long head. (photograph by K. C. Balcomb)

Figure 29. Sperm whales often show their large flukes as they begin long dives which may last over 90 minutes. (photograph by K. C. Balcomb)

SECTION 8. GRAY WHALE

Eschrichtius robustus Lilljeborg, 1861

DESCRIPTION

Gray whales reach a maximum length of 50 feet. They have no dorsal fin; instead they have a low hump followed by a series of small bumps on the dorsal ridge of the tail. They can be distinguished from the two other large whales with no dorsal fin (sperm and right) by their mottled gray color pattern; when the mouth is open, the color of the baleen makes the mouth appear yellowish. When swimming along just below the surface, they may appear a uniform grayish white. The head, in front of the blowhole, is usually scarred and covered with barnacles. There may be barnacles on other parts of the body as well. When viewed from above, the head is sharply pointed. The tail flukes are very broad.

Gray whales feed on benthic amphipod crustaceans in northern waters. They do not feed while on migration.

One interesting behavior in which the animal hangs vertically and raises much of his head out of the water is called "spy hopping". It has been speculated that this behavior is related to (a) swallowing food and/or (b) visual orientation. The second of these explanations seems by far the more reasonable.

Pressures from whaling nearly brought this species to extinction around the turn of the century, but it was protected by international agreement in 1946, and its population is now increasing. There were an estimated 10,000 animals in 1970.

MAY BE CONFUSED WITH

The well known migration of this species, its distinctive mottled gray color, and the ridges in the tail stock make it unlikely that it will be confused with any other species.

DISTRIBUTION

Gray whales are migratory. The vast majority of the animals spend from about May through November feeding in the waters of the Bering and Chukchi Seas. From December through January, individuals and small groups can be seen moving southward, to the breeding grounds in the shallow lagoons along the coast of Baja California and Sonora and Sinaloa, Mexico (they bred in San Diego Bay as recently as 1900). At least during this portion of their migration, most gray whales approximately follow the coastline. They are frequently seen in or near the surf and have been reported swimming into lagoons, bays, and river mouths. There the females give birth to a single 14-17 foot calf (which they will nurse for 6-8 months) and begin their migration, with their calves, back to the northern feeding grounds. Small groups may be seen off Baja California, California, Oregon, and Washington during February, March, and April, heading north.

Large groupings have been reported off western Canada during the northern migration. It is sometimes possible to approach very close to gray whales, though females seem more nervous and more likely to stay away from boats when they have calves.

Figure 30. Distribution and migration of the California gray whale.

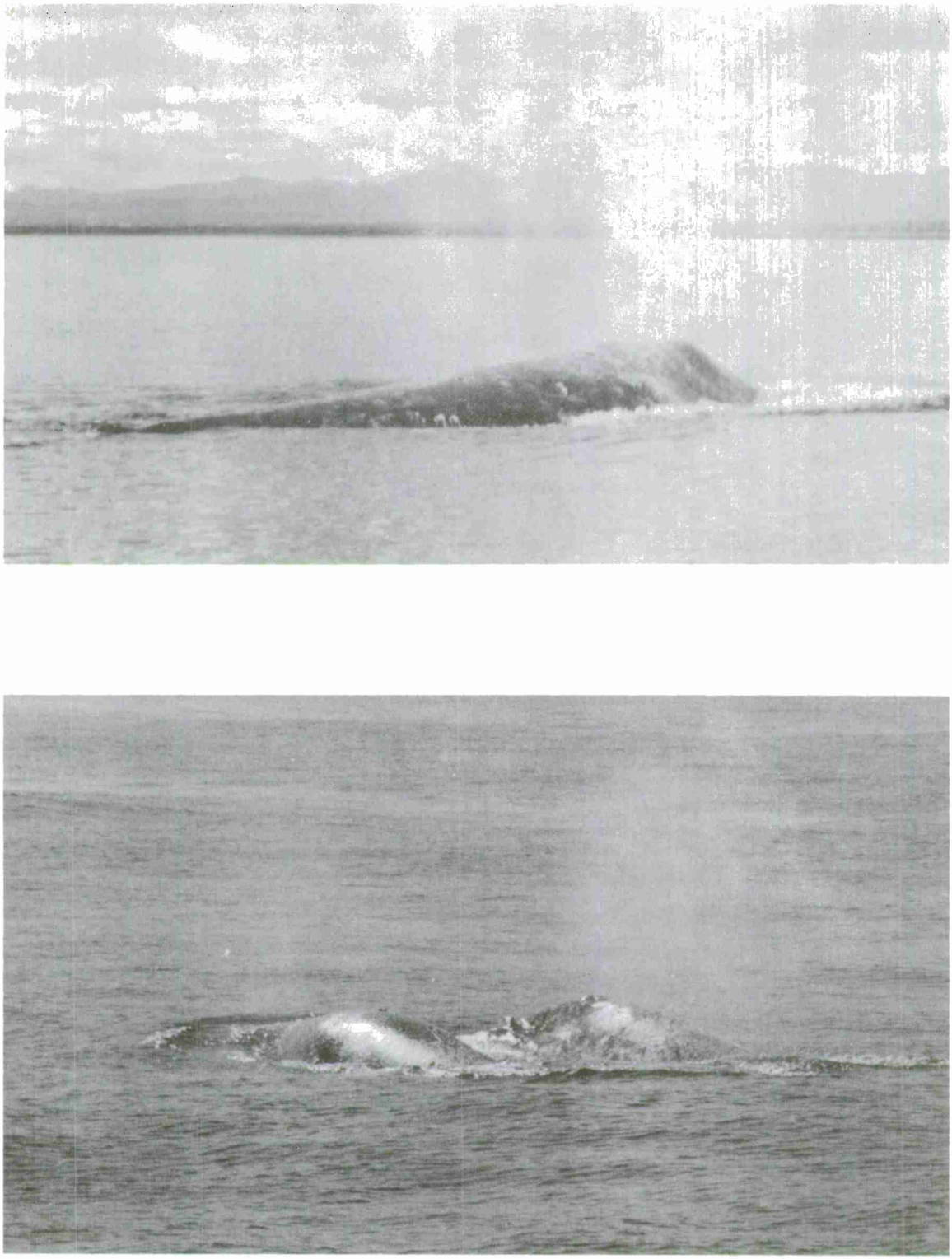


Figure 31. Gray whales off San Diego, California. (photographs by B. C. Parks, top, and Dr. Raymond Gilmore, bottom)

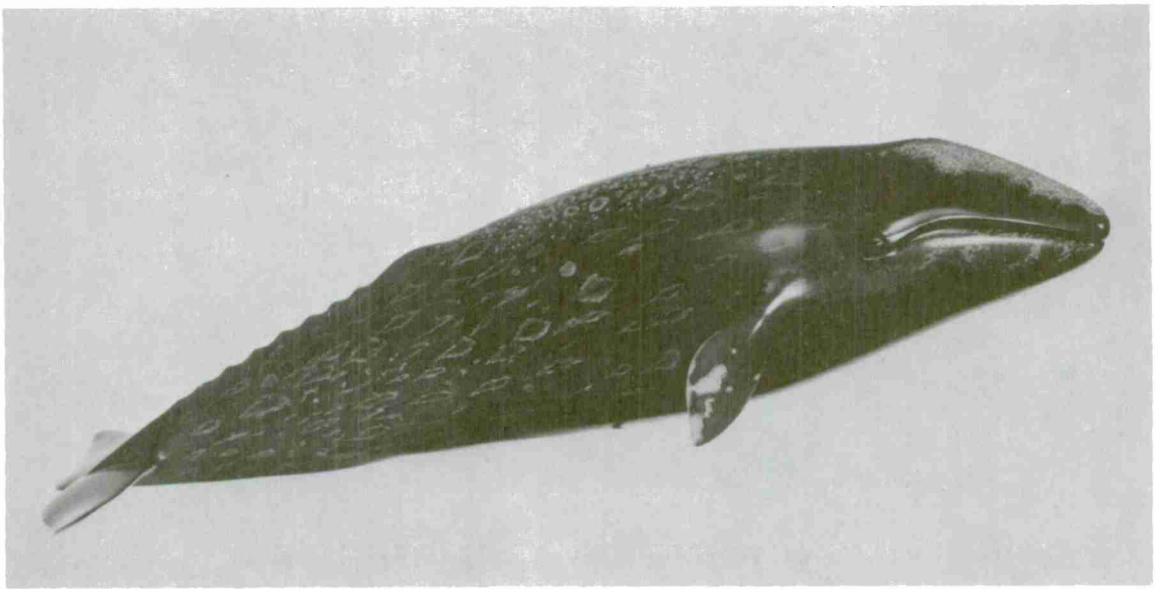


Figure 32. A photograph of a gray whale model at the Los Angeles County Museum. Note the barnacle-covered head, the mottled body, and the humps on the tail stocks. Living gray whales are considerably more slender than this model. (photograph by W. E. Evans)

Figure 33. Two successive shots of a group of gray whales surfacing to breathe off San Clemente Island, California. In each photograph one animal has just exhaled and his short puffy blow is visible over his narrow tapering head. (photographs by S. Leatherwood)

Figure 34. A large 40-foot gray swims along just below the surface off North Coronado Island. The animal's mottled appearance is highlighted. (photograph by S. Leatherwood)

Figure 35. Gray whales frequently expose the flukes when they begin a dive. (photograph by B. C. Parks)

MEDIUM-SIZED WHALES WITH DORSAL FIN

SECTION 9. GIANT BOTTLENOSE WHALE

Berardius bairdi Stejneger, 1883

DESCRIPTION

Giant bottlenose whales, also known as Baird's beaked whales, are slate gray to army brown with blotches of white on the underparts. The back is usually covered with numerous scratch marks.

These whales may reach 42 feet in length. Females are, on the average, slightly larger than males. The head of both sexes is bulbous. The snout is long and very like that of the bottlenose dolphin. The lower jaw extends past the tip of the upper jaw. The dorsal fin, located on the latter 1/3 of the back, is short and triangular.

Giant bottlenose whales occur in packs of up to 20 animals and are frequently hard to approach. The blow is rather low and indistinct. When they surface to breathe, individuals often bring their heads out of the water at an angle, making the beak clearly visible. They are probably deep divers, feeding on squid, octopi, rockfish, and herring.

MAY BE CONFUSED WITH

To an uncritical observer, or from a distance, these animals might be confused with minke whales. Minkes, however, are different in head and body proportions, have a backcurved dorsal fin, inhabit more inshore waters, and are sometimes curious about boats. In addition, minkes are usually solitary or paired, while *Berardius* is often found in pods of up to 20 individuals.

DISTRIBUTION

Though not very abundant, Giant bottlenose whales are distributed from St. Matthew Island in the Bering Sea south to at least San Clemente Island off California. Though their seasonal movements are not well known, they are seen off Northern California at least from June through October and off British Columbia in August. Whaling records suggest there may be a partial geographical segregation of the sexes.

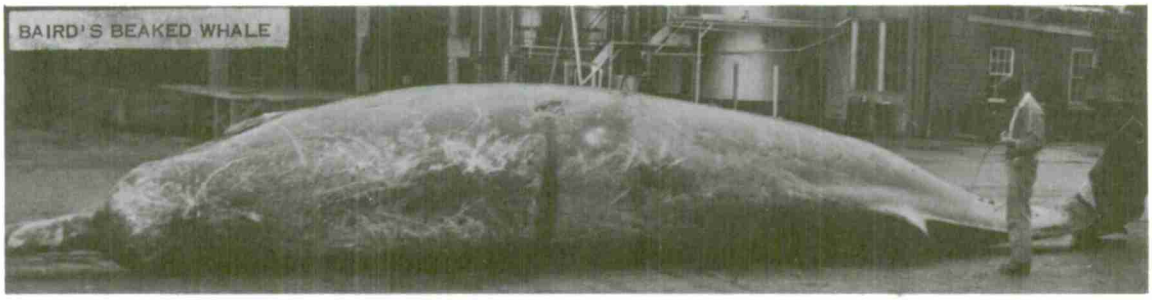


Figure 36. In this photograph of a giant bottlenose, or Baird's beaked whale, the very prominent beak, the small dorsal fin very far back on the tail, and the extensive scarring of the back are evident. (photograph by G. C. Pike, courtesy of Ian MacAskie)

Figure 37. The scarred back and the dorsal fin of a swimming giant bottlenose whale. (photograph by K. C. Balcomb)

Figure 38. A small group of swimming giant bottlenose whales in the Gulf of Alaska. The animals sounded before the boat could approach them closely. (photograph by S. Leatherwood)

SECTION 10. GOOSE-BEAKED WHALE

Ziphius cavirostris G. Cuvier, 1823

DESCRIPTION

Goose-beaked whales, also known as Cuvier's beaked whales, reach a length of approximately 32 feet.

Color patterns vary. Most individuals are rust brown, almost red, on the back, and dark brown or black below. The body is frequently covered with white or cream-colored splotches, particularly the belly. Old males have a white head and are frequently scarred extensively.

The dorsal fin is small and smoothly backcurved, and is located behind the midpoint of the back.

Goose-beaked whales occur in groups of up to 25 individuals. They reportedly stay down well in excess of 30 minutes, and are presumably deep divers. When they surface, they emit a small indistinct blow which may not be visible more than a few hundred yards away.

MAY BE CONFUSED WITH

Because of their size, goose-beaked whales should be easily distinguishable from the other beaked whales, all of which, except the giant bottlenose, are smaller. However, close examination may be necessary for positive identification.

DISTRIBUTION

The goose-beaked whale is found from the Bering Sea south at least to the tip of Baja California, primarily in offshore waters. It is probably more abundant than the other beaked whales in the eastern North Pacific.

Figure 39. This beaked whale, probably a goose-beaked whale, jumps beside a boat off Baja California. The size and position of the dorsal fin are characteristic of the beaked whales. (photograph by S. Leatherwood)

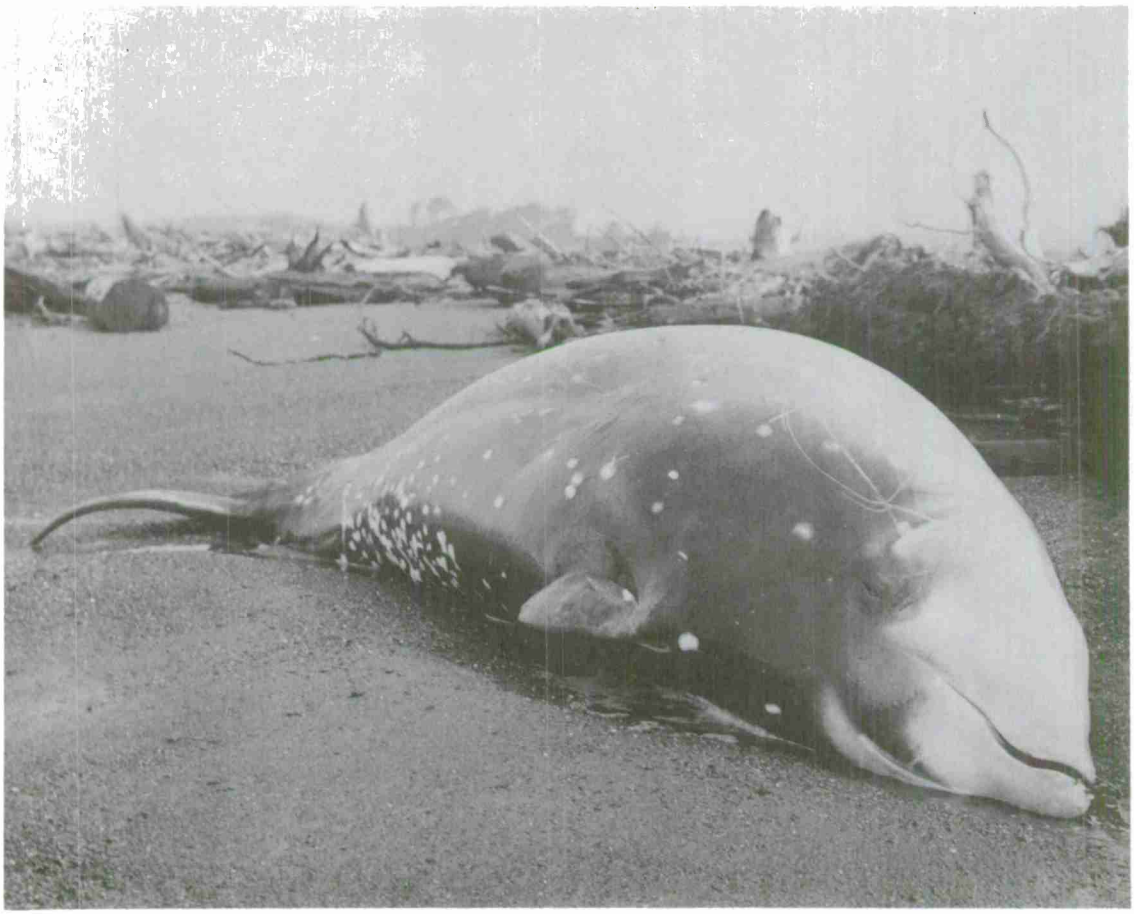


Figure 40. A beached goose-beaked whale. Note the white speckling, the white head, and the scratches on the side and back. (photograph by Warren J. Houck)

SECTION 11. OTHER BEAKED WHALES

Mesoplodon carlhubbsi Moore, 1963
Mesoplodon ginkgodens Nishiwaki and Kamiya, 1958
Mesoplodon stejnegeri True, 1885
Mesoplodon densirostris Blainville, 1817

DESCRIPTION

In addition to the Baird's beaked whale (Section 9) and Cuvier's beaked whale (Section 10), the family of beaked whales in the eastern North Pacific includes four other species, virtually indistinguishable from each other in the brief encounters typical of these whales at sea. The little that is known of these animals has been learned primarily from beached specimens and all four species are assumed to be relatively rare. Only a general description and statement of size is provided here.

M. carlhubbsi, the arch-beaked whale, reaches a length of 17 feet and is found in the temperate waters from British Columbia south to California – presumably offshore.

M. ginkgodens, the ginkgo-toothed whale, reaches a length of at least 18 feet and in the eastern North Pacific is represented only by a beached specimen from Del Mar, California.

M. stejnegeri, the Bering Sea beaked whale, reaches 20 feet in length and is found from Oregon north to the Bering Sea.

M. densirostris, the dense-beaked whale, reaches 17 feet and is found in the tropical and warm temperate oceans.

On all animals, the dorsal fin is small and set well back on the body. Adult females have no functional teeth (they remain imbedded in the gums throughout life); adult males have one pair of functional teeth in the lower jaw. Because information on these animals is extremely scarce, any reports will be excitedly received by whale biologists.

MAY BE CONFUSED WITH

To be positively identified, the skull must be examined. The dorsal fin and general body shape are very similar to those of Cuvier's beaked whale, but the latter has a shorter rostrum.

DISTRIBUTION

What is known of the distribution of these whales is given under the discussion of each species.

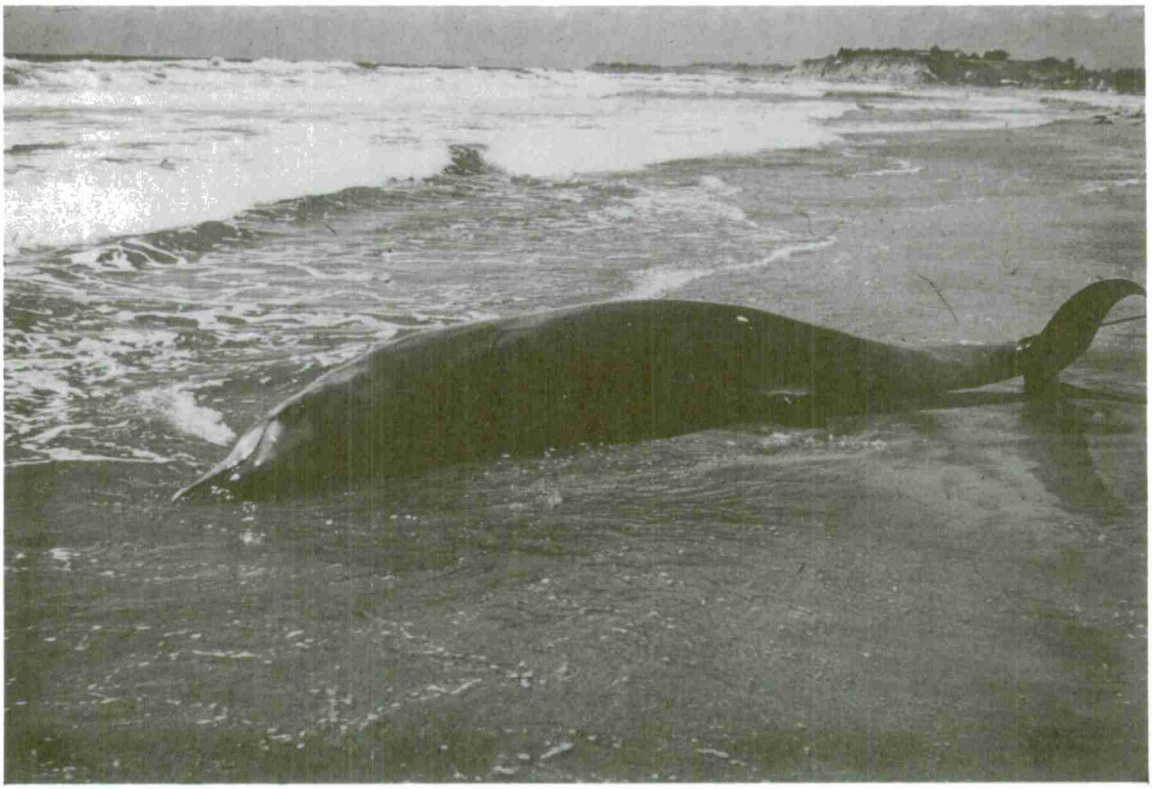


Figure 41A. *M. ginkgodens.* Body shape. (photograph by R. M. Gilmore)

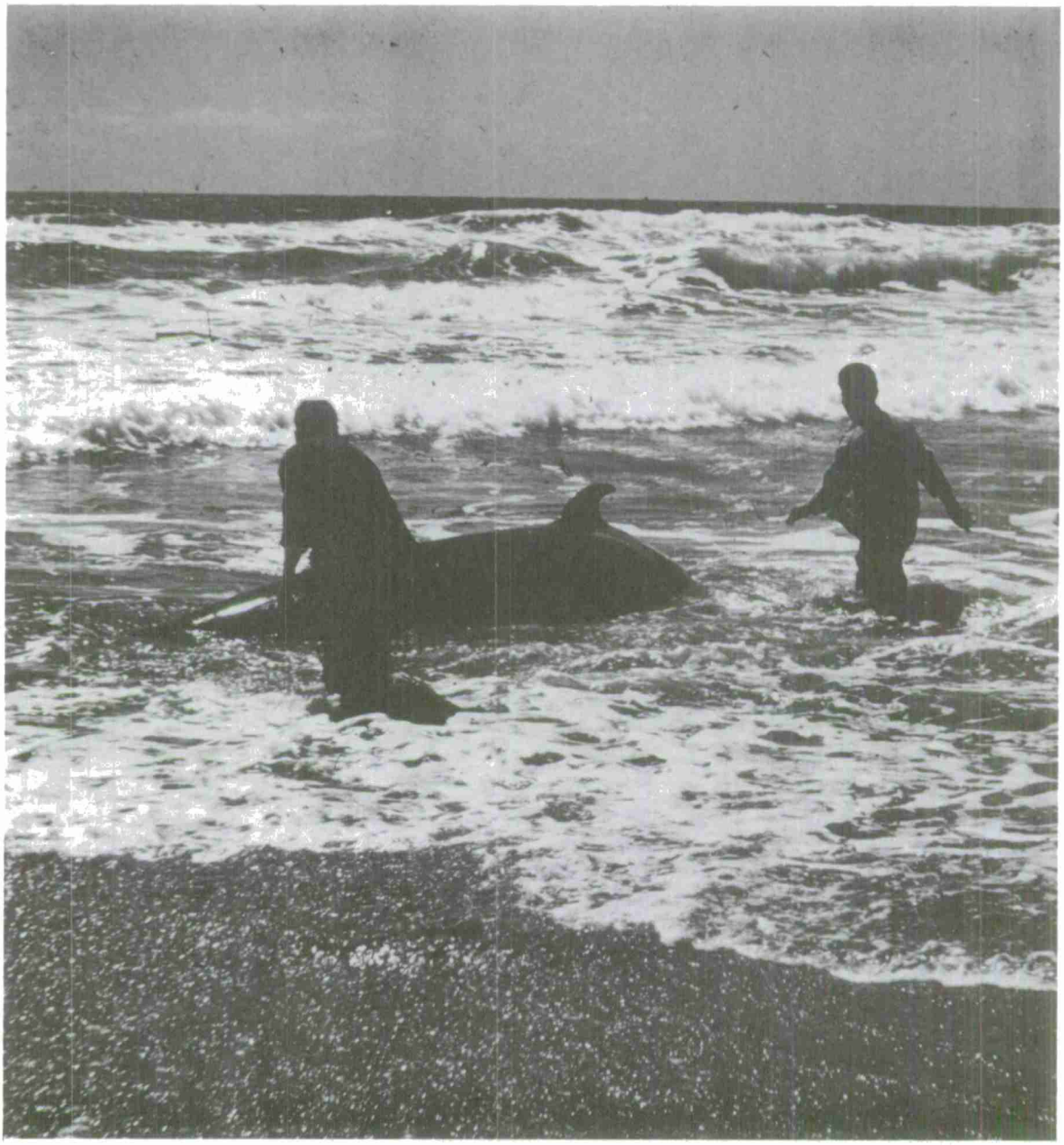


Figure 41B. *M. ginkgodens.* Position and shape of the dorsal fin. (photograph by R. M. Gilmore)

Figure 41C. *M. ginkgodens.* Head shape from the top. (photograph by R. M. Gilmore)

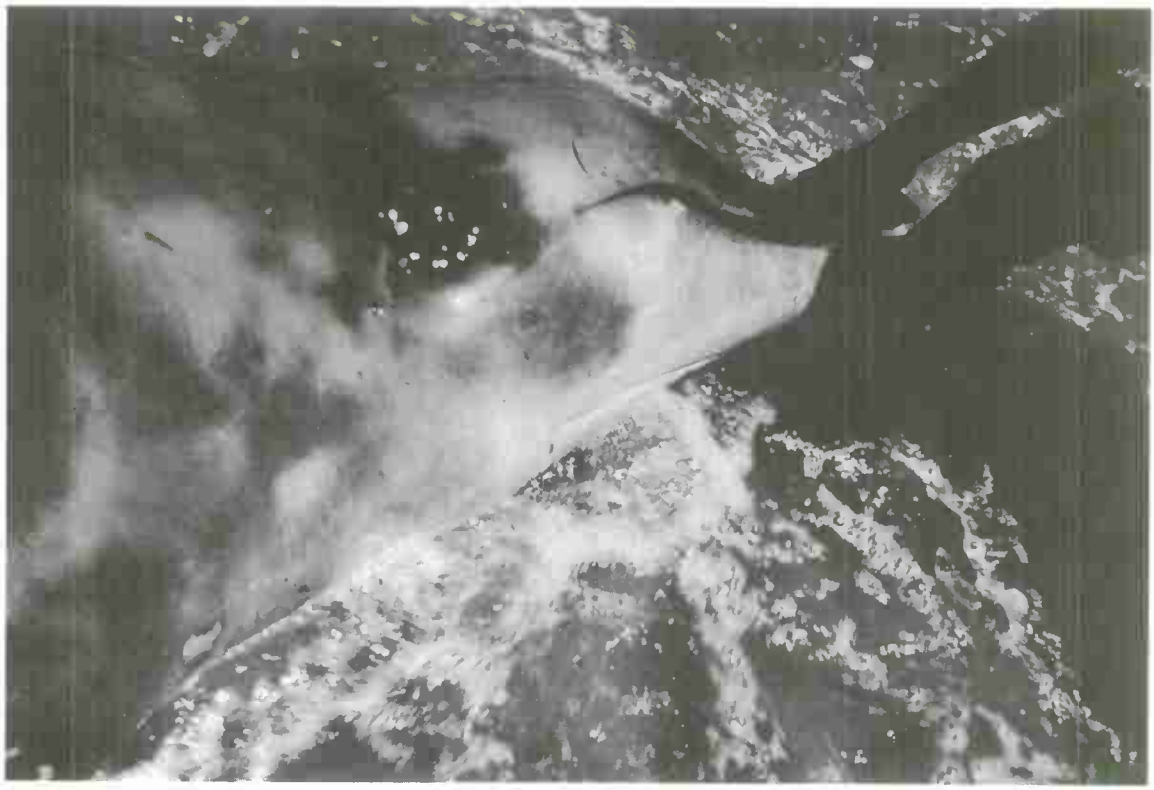


Figure 41D. *M. ginkgodens.* Head shape from the side. (photograph by R. M. Gilmore)

SECTION 12. MINKE WHALE

Balaenoptera acutorostrata Lacepede, 1804

DESCRIPTION

Minke (pronounced minky) whales, also known as little piked whales or sharp-headed finners, are the smallest of the baleen whales in the northern hemisphere, reaching a length of approximately 33 feet. They are grayish black on the back and white on the belly and on the underside of the flukes and flippers. Each of the flippers has a very distinct horizontal band of white. The baleen, which may be visible from a short distance away when the animal is feeding, is coarse, less than 1 foot long, and either yellow or white.

When viewed from above, the snout of the minke is distinctly triangular, similar to but sharper than that of the finback. The animal's blow is low and barely visible. The dorsal fin is relatively large and falcate and is usually exposed as the animal rolls through the water to breathe. The flukes are seldom raised when the animal is beginning a dive.

Minke whales are frequently solitary animals though they may congregate in areas of food concentration in northern seas during the spring and summer. They are more likely to be seen up close than their larger cousins (blue, fin, and sei) or than the giant bottlenose whales because they frequently come very close to boats, as if curious about them.

Minkes feed primarily on small shoal fish (cod, pollack, and capelin) and may approach very close to shore pursuing these.

MAY BE CONFUSED WITH

Because of their small size, minkes are unlikely to be confused with the fin, blue, or sei whales. From a distance, however, they may be mistaken for giant bottlenose whales. Minkes are far more common, however, and may be distinguished from giant bottlenose whales by differences in the dorsal fin (theirs is large and falcate, and not triangular like the beaked whales'), diving behavior, distribution, and reaction to boats. A whale of this size seen off California during the fall and winter months is more likely to be a minke than a giant bottlenose whale, though close examination may be necessary to make a positive identification.

DISTRIBUTION

Minkes are one of the most widely distributed of the whales of the Eastern Pacific. During the summer, they range from the Bering and Chukchi Seas south at least to Central Mexico, from the coldest polar seas to warm tropical oceans. During this season, they are common off Central California and abundant inside Puget Sound, but are far more abundant in Alaskan waters.

During the winter, minkes are found at least from Central California to Islas Revilla Gigedo off Mexico, though they are most abundant near the California Channel Islands.

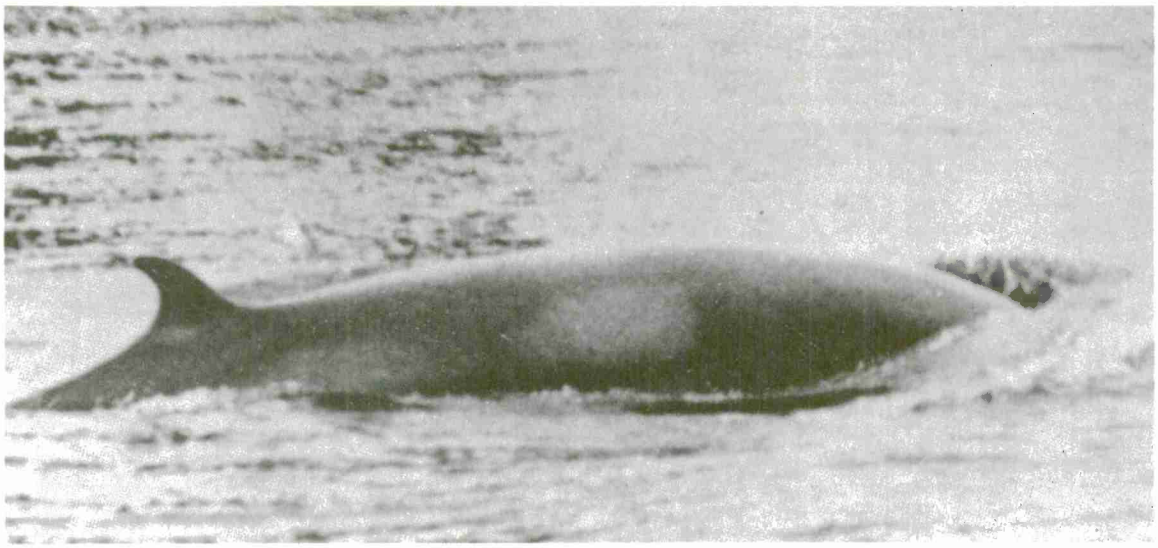


Figure 42. The Minke whale, at a maximum length of 33 feet the smallest of the baleen whales, is more likely to be seen in the Pacific than in the Gulf of California. These animals have a very indistinct, almost invisible, blow and are sometimes curious enough about boats that they will alter their course to investigate them. (photograph courtesy of Nanaimo Free Press)

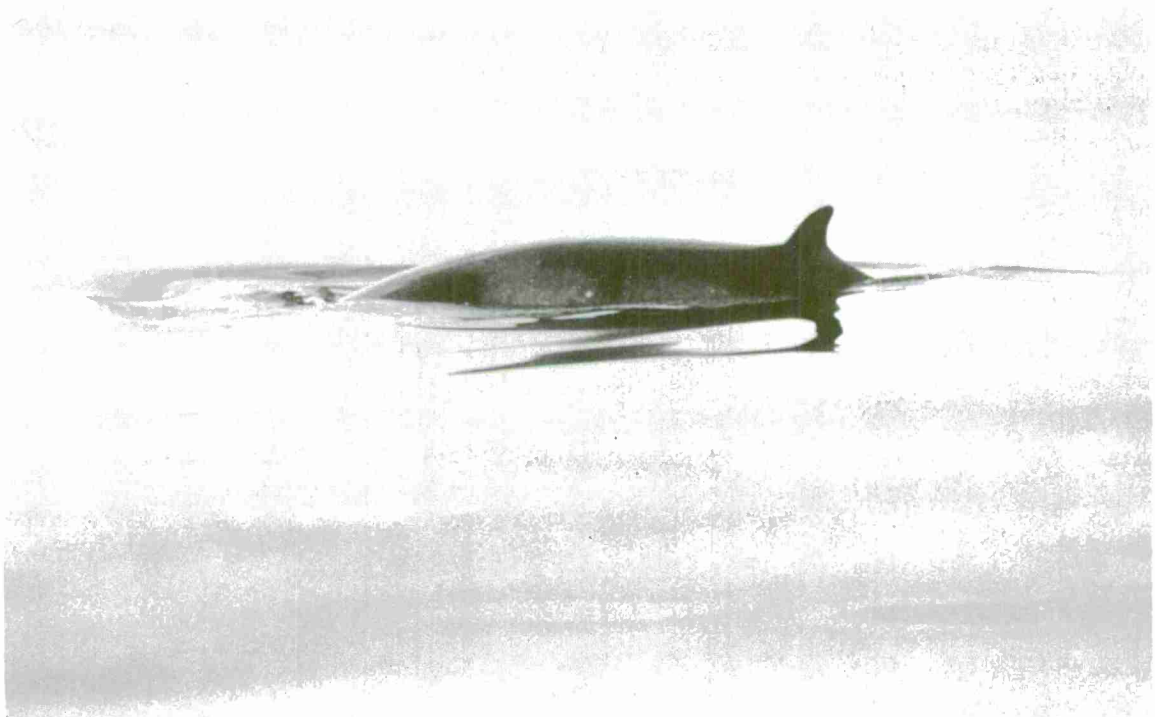


Figure 43. A Minke whale off San Clemente Island, California. These animals are widely distributed in the eastern Pacific. (photograph by K. C. Balcomb)

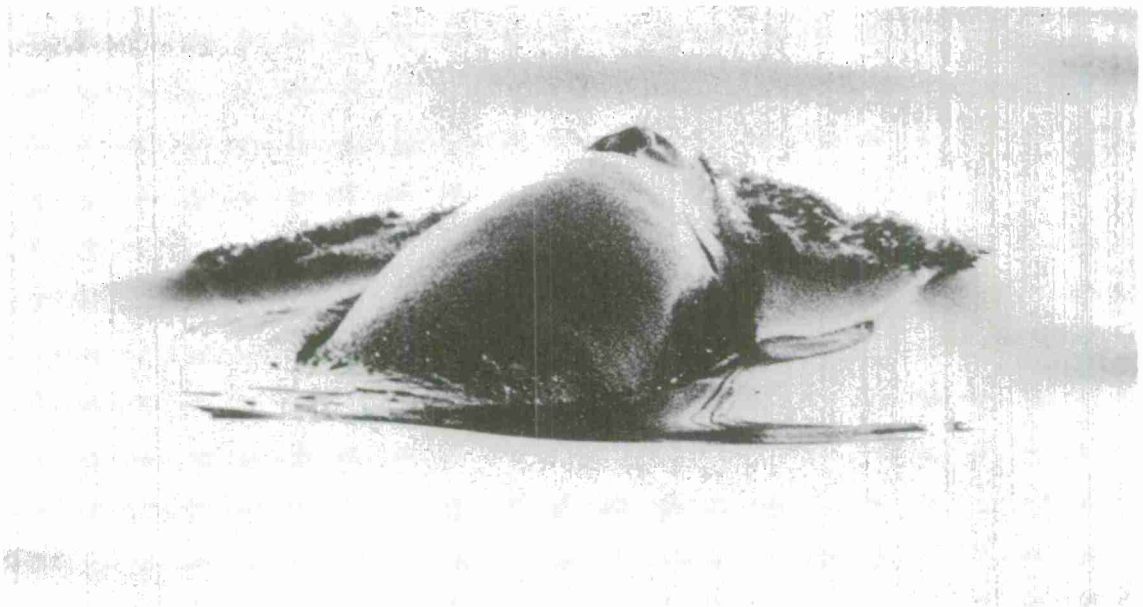


Figure 44. A Minke whale off Baja California, Mexico. (photograph by K. C. Balcomb)

SECTION 13. KILLER WHALE

Orcinus orca Linnaeus, 1758

DESCRIPTION

The most distinctive field characteristic of the killer whale is the very prominent dorsal fin, which may be as much as 6 feet tall and extremely erect in adult males. Though the dorsal fin of females and immature animals is less than 3 feet tall and slightly back-curved, it is nonetheless taller even in these animals than in any other cetacean species.

Killer whales are the largest members of the dolphin family. Adult males reach a length of over 25 feet (lengths of 31 feet are recorded for the western North Pacific). Females are slightly smaller. At birth, young are approximately 7-8 feet long. Both sexes are heavy-bodied and have large paddle-shaped flippers.

They are basically black but have an extensive region of white on the undersides extending from the lower jaw to the anal region, with a branch extending onto the flank behind the dorsal fin. There is an oval white patch on the side of the head just above and behind the eye, and a light gray saddle marking just behind the dorsal fin. The undersides of the flukes are white. Both all-black and all-white animals have been reported (one albino was captured in B. C. in 1970) but these are unusual.

Killer whales usually travel in groups of from a few to 25 or 30 individuals, though herds of more than 50 have been reported from Puget Sound.

Killer whales feed on large fishes and other marine mammals (seals, sea lions, and porpoises and whales). In the antarctic, they include penguins in their diet.

Special Note: Controversy still continues over whether or not the killer whale poses a threat to man. Documented attacks of killer whales on boats are rare and have usually been provoked (i.e., harpooning or attempts to capture). Only one uncertain instance of an attack in the wild has been reported, but all divers and mariners should be cautioned that this powerful animal is perfectly capable of doing tremendous damage, and should not be provoked.

MAY BE CONFUSED WITH

Because of its very distinctive dorsal fin, body shape, and coloration, the killer whale is not likely to be confused with any other whale when it can be examined at close range or when an adult male is present in the group. Pods of females and immature animals, however, may be confused with false killer whales. The two may be distinguished by the following differences:

Killer Whale		False Killer Whale
Chunky	Body Shape	Slender

Killer Whale	(Continued)	False Killer Whale
Black with white on belly, flank, and head	**Body Color**	All black
Very tall and erect in adult males, slightly backcurved in females	**Dorsal Fin**	Short, slender, strongly recurved
Broad, rounded	**Head Shape**	Tapered, slender
Paddle-shaped	**Flipper Shape**	Narrow, tapered
25 feet	**Maximum Length**	18 feet

Furthermore, false killers reach a maximum length of only 18 feet and are the only "black fish" which will ride the bow wave of a ship.

DISTRIBUTION

Killer whales are found in the Bering Sea and in the entire Pacific Ocean. They have also been seen in the Arctic Ocean but they are apparently rare there. They are most abundant near the Aleutian Islands and in the area of Puget Sound but have been seen in the tropics. Though they are often sighted well out to sea, they are frequently seen moving to and into the kelp beds of Southern California and into bays and inlets. There may be a seasonal shift of killer whales to the south in winter, riding cold currents into that area.

They are reportedly abundant around the islands off Baja California, on which pinnipeds breed during the seal's breeding seasons. Killer whales have been recorded near Hawaii.

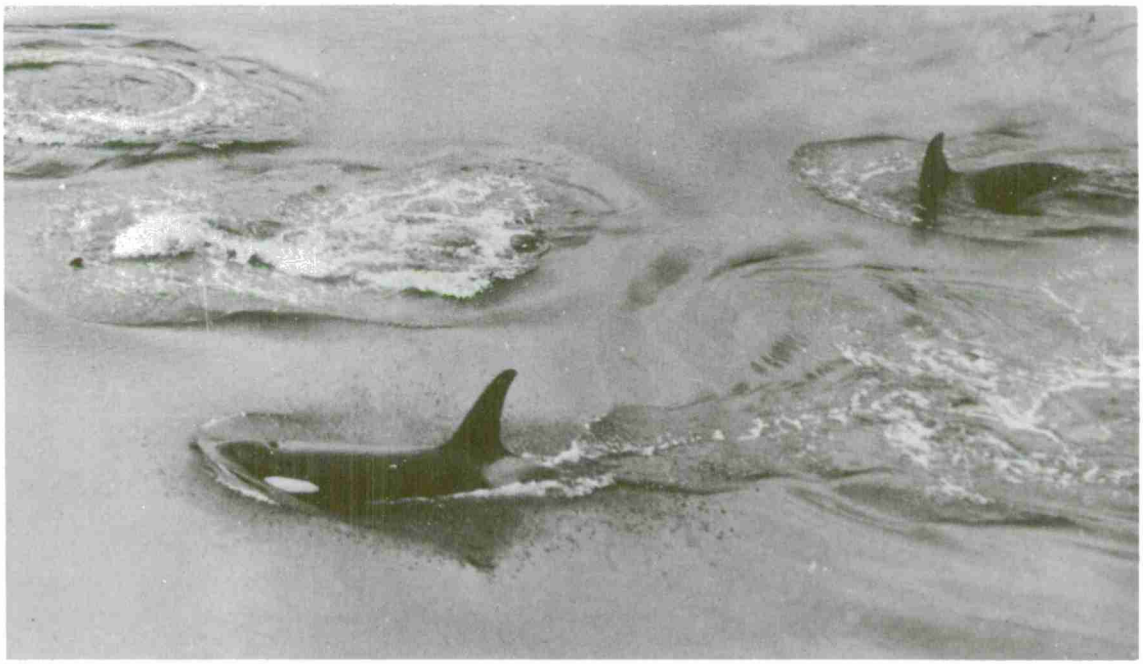


Figure 45. This photo of killer whales shows the distinctive dorsal fin, the white patch above and behind the eye, and the gray "saddle" behind the dorsal fin. (photograph by John Thompson)

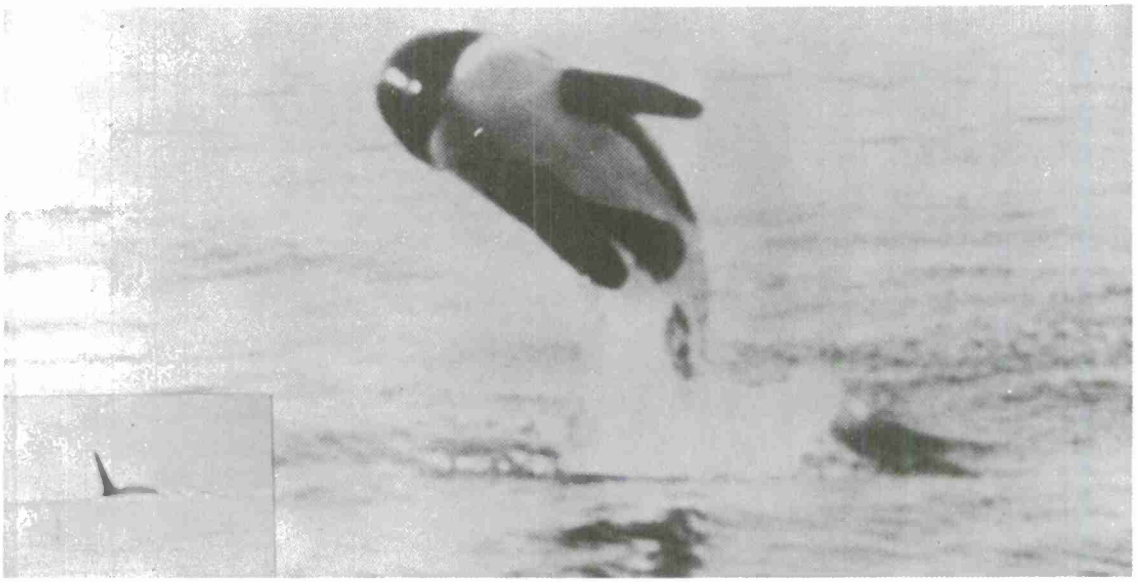


Figure 46. The prominent white belly and the large rounded flippers are evident in this photograph of a breaching killer whale. The inset photograph shows the dorsal fin of a large bull. (photographs by Phil Schuyler)

Figure 47. The prominent dorsal fins of even a group of females or immature animals make it unlikely that the killer whale will be confused with any other animal. (photograph by W. C. Cummings)

Figure 48. A vigorously swimming killer whale skims along the surface off Catalina Island, California. The white belly and the eye patch are clearly visible. (photograph by W. C. Cummings)

SECTION 14. SHORT-FINNED PILOT WHALE

Globicephala macrorhyncha Gray, 1846

DESCRIPTION

Pacific pilot whales are most easily identified by the thick, bulbous head and the all-black coloration (characteristics which prompted the common names "pothead" and "blackfish" respectively) and by the low-profile, backcurved dorsal fin which has a very long base and is set far forward. If it can be examined more closely, the pilot whale will also be found to have long sickle-shaped flippers and a deep tail stock (just in front of the flukes) which it frequently exposes when beginning a dive.

Adult males may reach a length of approximately 22 feet while females are somewhat smaller. The black coloration of the back is interrupted by a light gray "saddle" behind the dorsal fin, which may be highlighted by bright sunlight, and by a light gray area on the chest.

Pilot whales travel in groups of from a few to perhaps several hundred animals and are sometimes accompanied by groups of Pacific bottlenosed porpoises. These bottlenosed porpoises and the adult male pilot whales are most frequently found on the outer edge of the herd. Though they may be found fairly close to shore at any time, the total population of pilot whales shifts inshore in the early spring, following the migration of squid (their primary food) to their shallower spawning grounds. The remainder of the year they are primarily offshore animals. Young are apparently born year-round.

In recent years, entire herds of pilot whales have beached themselves for unknown reasons in Mexico, and on the California Channel Islands.

MAY BE CONFUSED WITH

Pilot whales may be distinguished from the other similar-sized, all-black whale in the eastern North Pacific, the false killer whale, by the following features:

Pilot Whale		False Killer Whale
Thick and bulbous	**Shape of Head**	Gently tapering head
Head and upper body robust	**Shape of Body**	Long and slender
Low, very wide base	**Dorsal Fin**	Gently backcurved
Will not ride bow wave of a vessel	**Behavior**	May ride bow wave of a vessel
Black with gray saddle mark behind dorsal and gray region on chin	**Coloration**	All-black

DISTRIBUTION

Pilot whales are widely distributed in the tropical and temperate seas of the eastern North Pacific. Though there is a single record from the Alaskan Peninsula, they are apparently far more abundant from Point Conception south to Guatemala, and are found as far west as Hawaii. Though no long distance migration has been described, populations may shift north in the summer and south in the winter in response to changes in water temperature. At least one population, that one near the California Channel Islands, migrates inshore in spring and summer and moves offshore for the rest of the year.

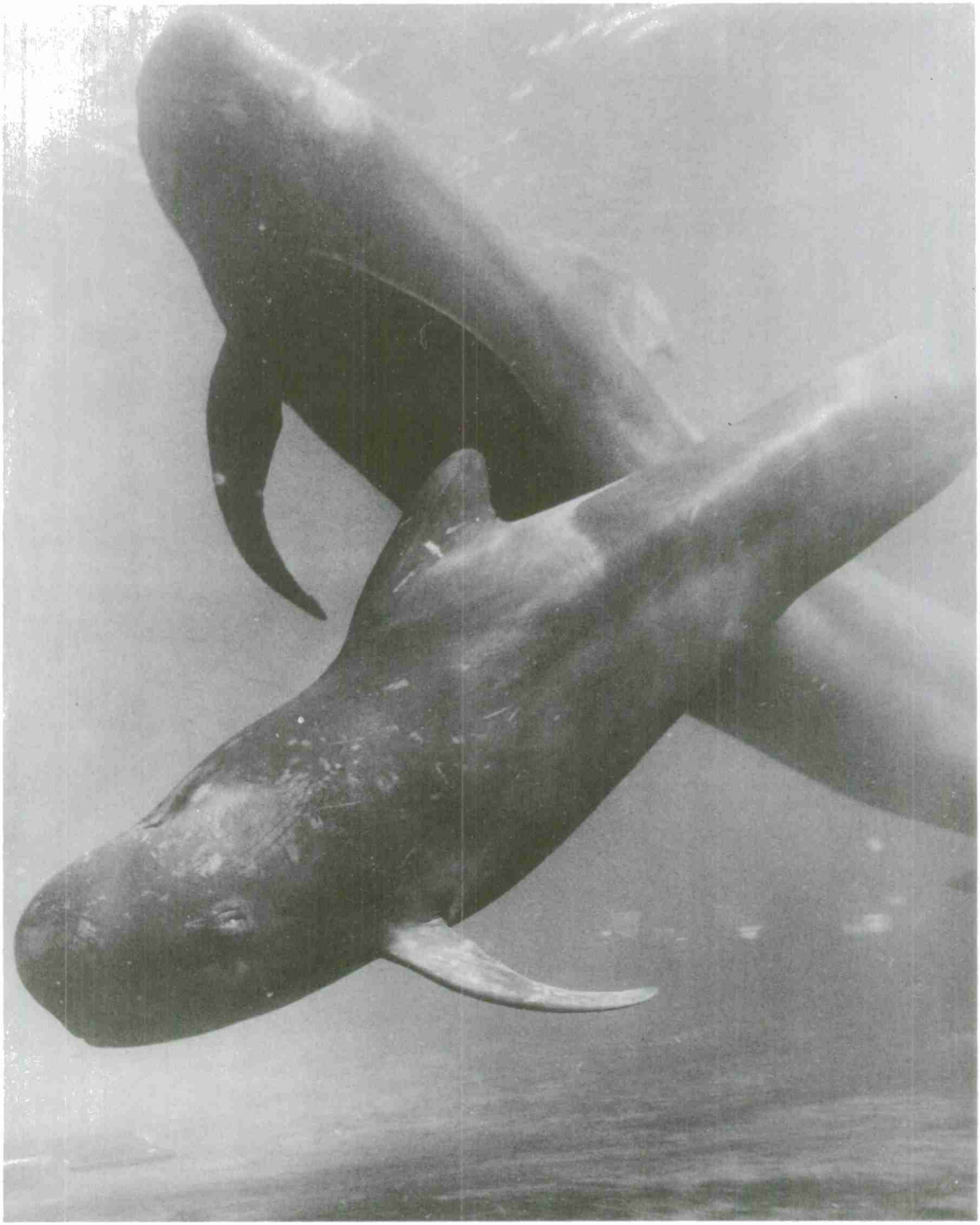


Figure 49. Pilot whales in the tank at Marineland of the Pacific. Note the long, sickle-shaped flippers, the thick body, and the bulbous head. (photograph by W. E. Evans)

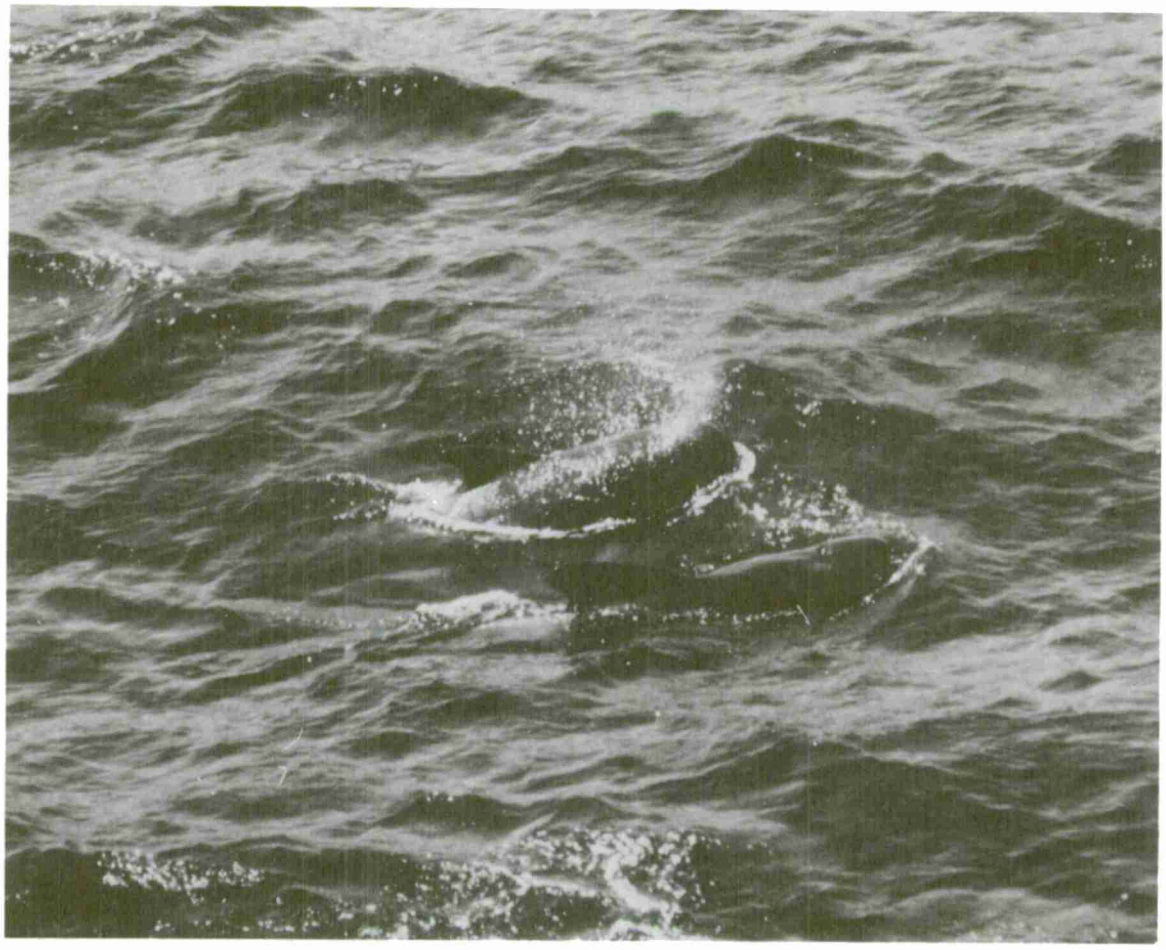


Figure 50. The bulbous head of the pilot whale shows as he breaks the surface to breathe. (photograph by S. Leatherwood)

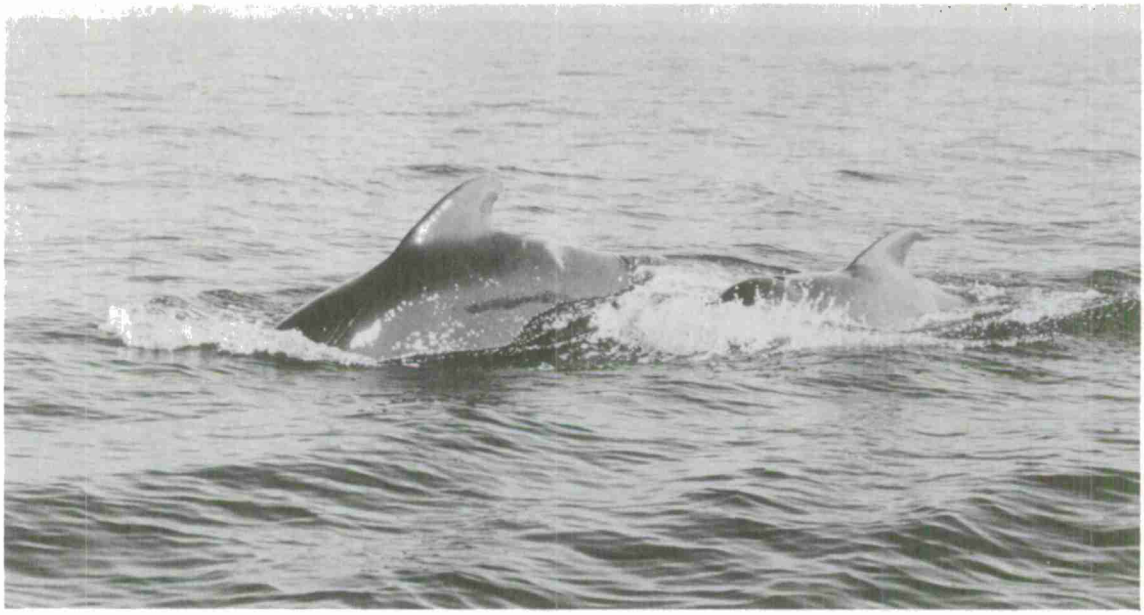


Figure 51. One of the most distinctive characteristics of the pilot whale is its long based, thick dorsal fin, located near the front of the body. (photograph by Larry Sammons)

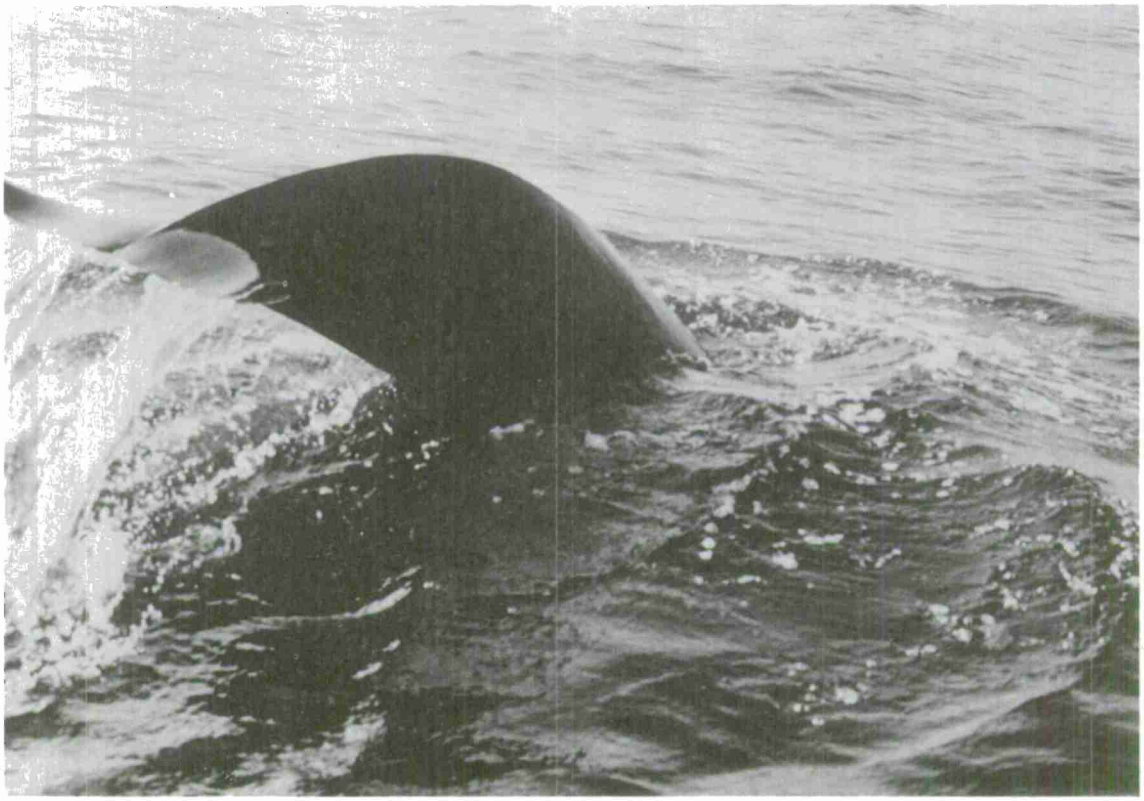


Figure 52. Pilot whales frequently show their thick tail stocks and flukes as they begin a dive. (photograph by Larry Sammons)

Figure 53. A typical pod of swimming pilot whales, including several young, off Catalina Island. (photograph by S. Leatherwood)

SECTION 15. FALSE KILLER WHALE

Pseudorca crassidens Owen, 1846

DESCRIPTION

False killer whales reach a length of approximately 18 feet. Calves, 5-7 feet, may be seen at any time throughout the year.

The body is all black.

The head is narrow and tapered.

The flippers are narrow and tapered.

The dorsal fin is shorter, slenderer, and more strongly recurved than that of the killer whale.

MAY BE CONFUSED WITH

The characteristics distinguishing the false killer whale from the pilot whale are discussed under Section 15. Its differences from the killer whale are tabulated in Section 13.

DISTRIBUTION

While the killer whale is primarily polar and temperate in distribution, the false killer whale is temperate and tropical. It is found from Washington south into the Gulf of Mexico and to Guerrero, Mexico and in the open sea at least as far south as 5°N latitude. It is probably primarily a pelagic species and sightings inshore are infrequent, though some schools have beached themselves. False killer whales are also found off Hawaii.

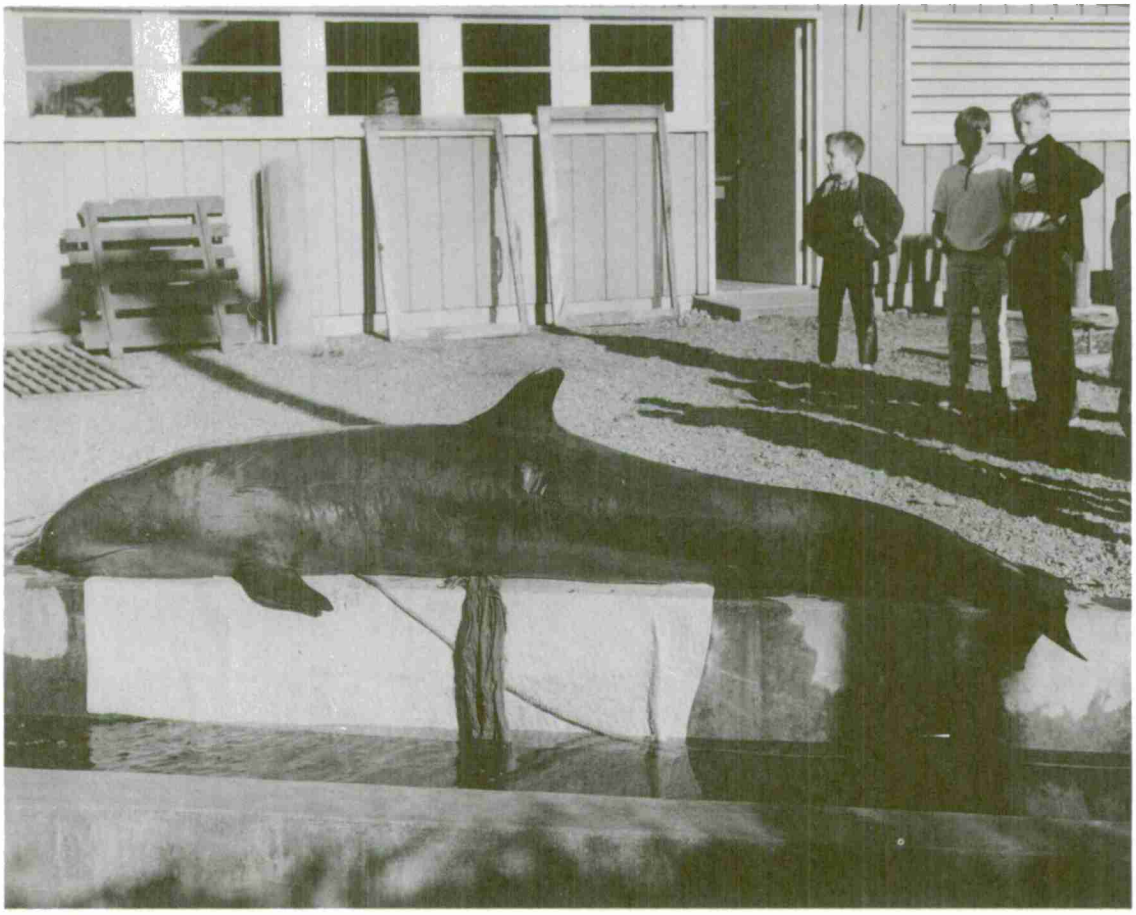


Figure 54. A false killer whale beached near Eureka, California. Note the long, slender, all-black body and the size and position of the dorsal fin. (photograph by Warren J. Houck)

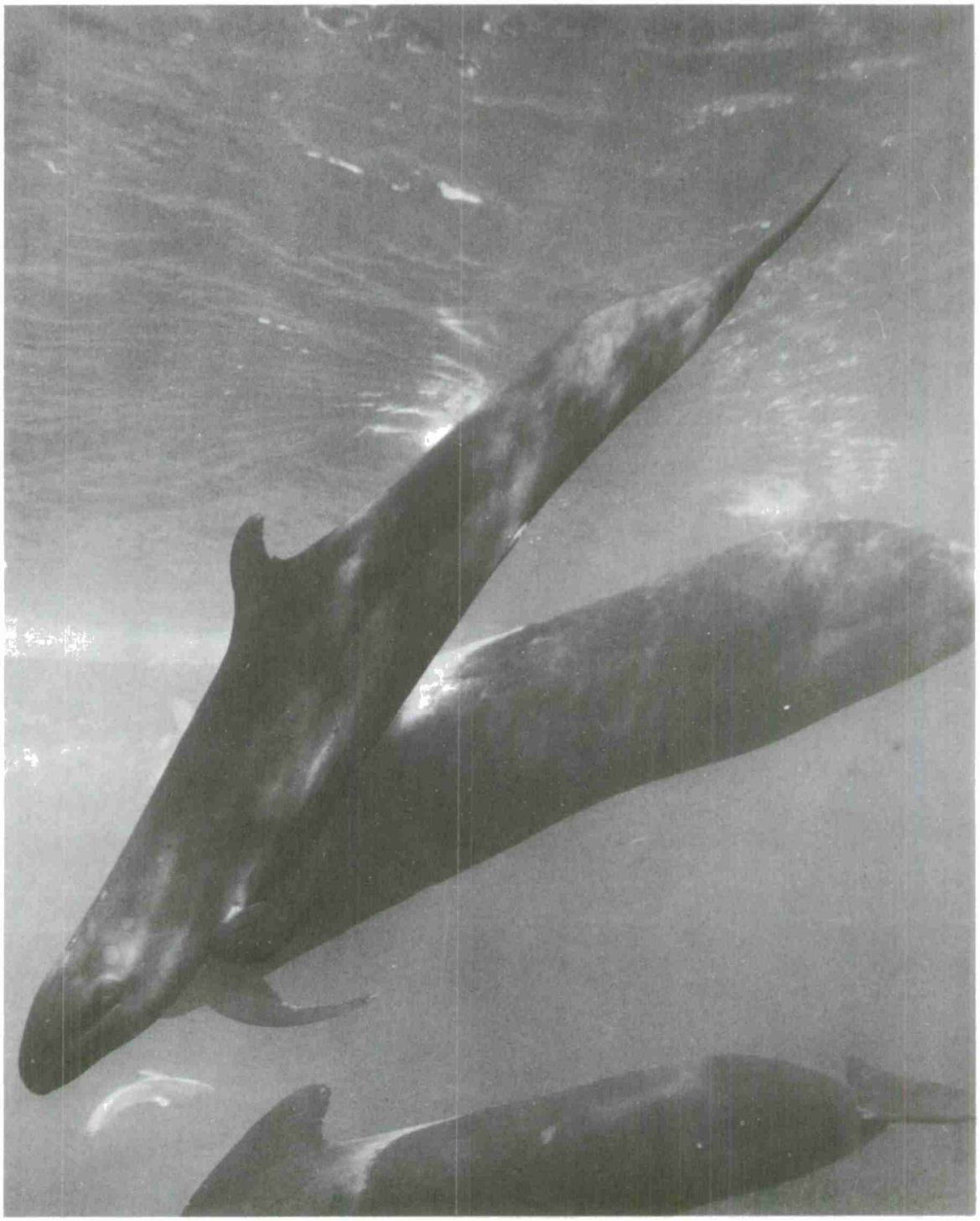


Figure 55. A false killer whale, seen beside a Pacific pilot whale in the tank at Marineland of the Pacific. Note that the false killer whale is much slenderer and lacks the prominent hump on the tail. He also lacks the gray saddle behind the dorsal fin highlighted on the pilot whale in this photograph by penetrating sunlight. (photograph by W. E. Evans)

Figure 56. False killer whales at sea. Note the rounded appearance of the snout and the generally slender body. (photograph by K. C. Balcomb)

SECTION 16. GRAY GRAMPUS

Grampus griseus G. Cuvier, 1812

DESCRIPTION

The gray grampus, also known as the white-headed grampus, mottled grampus, or Risso's dolphin, is a frolicsome medium-sized animal that may reach a length of approximately 13 feet. Young, which are probably born in December, are approximately 5 feet long. The body is a uniform slate gray at birth. As they grow older, Risso's dolphins become lighter in color and accumulate numerous scars all over the body, presumably from encounters with other dolphins and with the squid which are one of their major food items. Older animals have a white head, may be nearly all-white, and are quite covered with scars.

The side of the body may be tinged with a purplish or bluish color. There is generally a region of white on the belly, but the flippers and the tail flukes remain dark even in most adult animals.

The body shape of Grampus is very porpoise-like. The dorsal fin is rather tall, falcate, and pointed, and is near the middle of the back. The head is bulbous and is marked by a shallow crease which extends from the blowhole forward to the tip of the snout, which is rather pointed.

MAY BE CONFUSED WITH

The gray grampus is most easily confused with the false killer whale. The two species differ in the following characteristics:

Gray Grampus		False Killer Whale
To 13 feet	Size	To 18 feet
Young are a uniform gray color; older animals may be all-white	**Body Color**	All-black
Frequently scarred	**Markings**	Not scarred
May be all-white	**Head Color**	Black
Tall and backcurved (very like that of the bottlenose dolphin)	**Dorsal Fin**	Very tall, slender and sharply backcurved

The gray grampus might also be confused with the pilot whale. These two species differ in the following characteristics:

Gray Grampus		Pilot Whale
To 13 feet	Size	To approximately 22 feet
Tall and backcurved; located about midway on back	Dorsal Fin	Medium low, with very long base, curved on tip; located well forward on the back
Pointed and marked by shallow crease from blowhole to tip of snout	Head Shape	Thick and bulbous

DISTRIBUTION

Though *Grampus* has been reported from Stuart Island, British Columbia, in Puget Sound, its common range probably extends from Central California south at least as far as Acapulco, Mexico, and Clipperton Island, offshore from Costa Rica. Like other dolphins whose range is apparently limited to more temperate waters, the gray grampus probably moves to the north annually during the spring and summer when fingers of warm water move off the coast.

Grampus is an offshore species and, at least off California, is seldom encountered inside Sixty Mile Bank, Cortes and Tanner Banks. *Grampus* is also found off Hawaii.

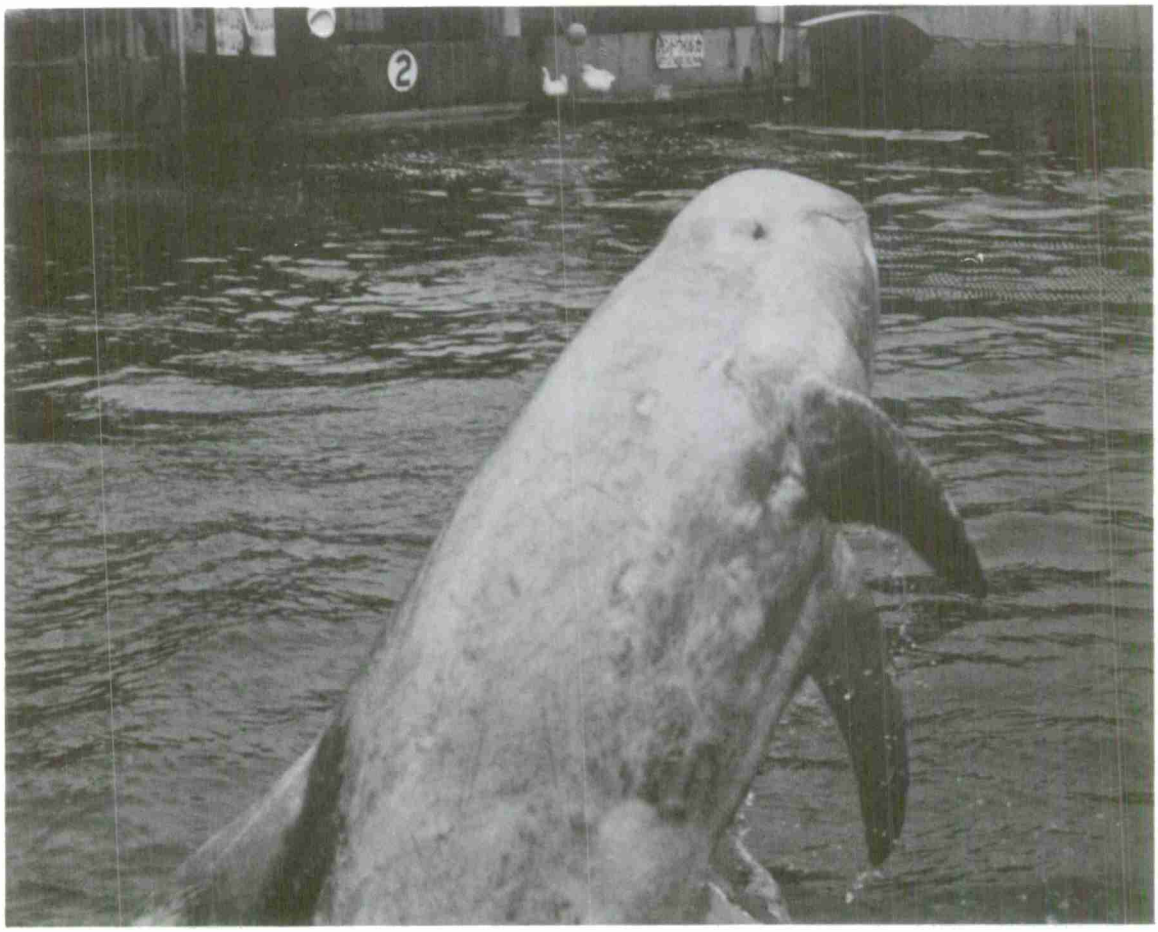
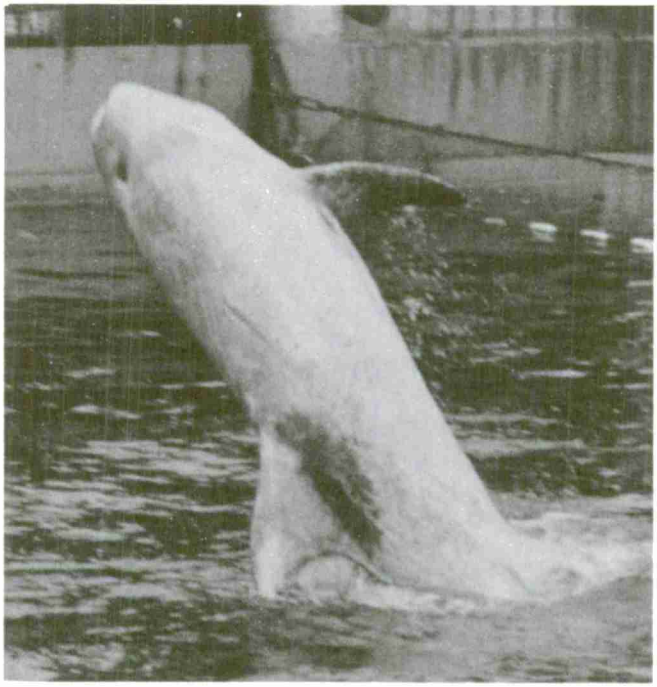


Figure 57. A gray grampus jumping at Enoshima Aquarium, Japan. Note the nearly white adult coloration and the absence of a beak. (photograph by W. E. Evans)



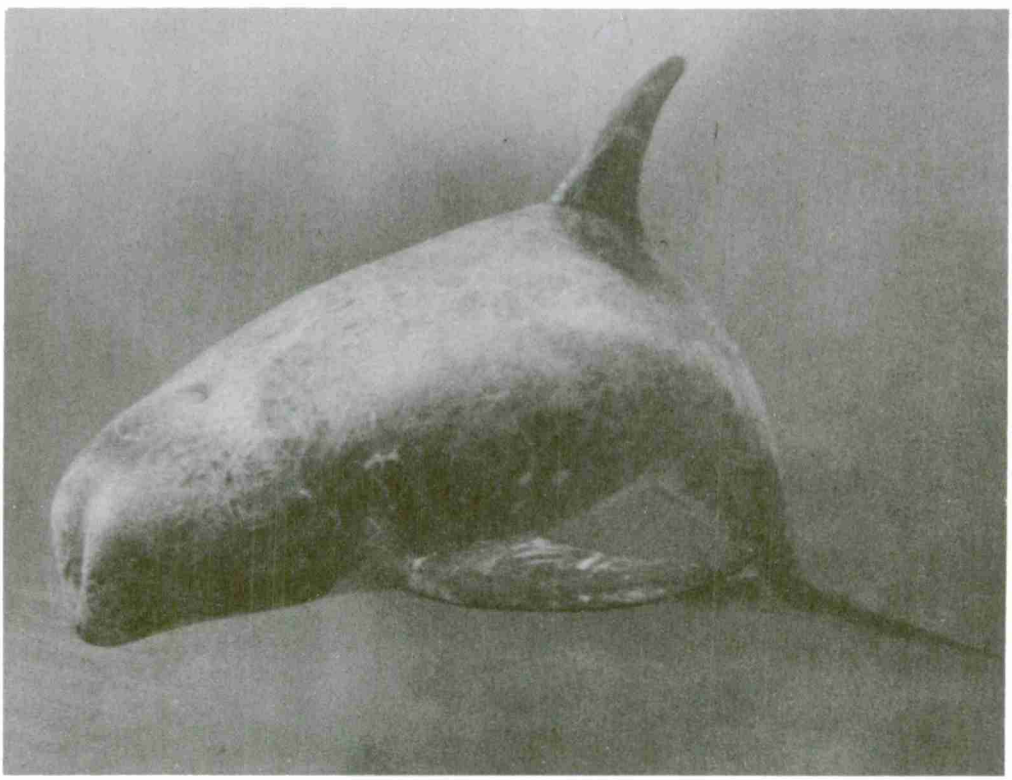


Figure 58. Gray grampus. The groove separating the melon or forehead is easily seen in both photographs. (photographs by W. E. Evans, top, and David K. Caldwell, bottom)

Figure 59. *Grampus* at sea. The extensive scarring of the back is very characteristic. (photograph by K. C. Balcomb)

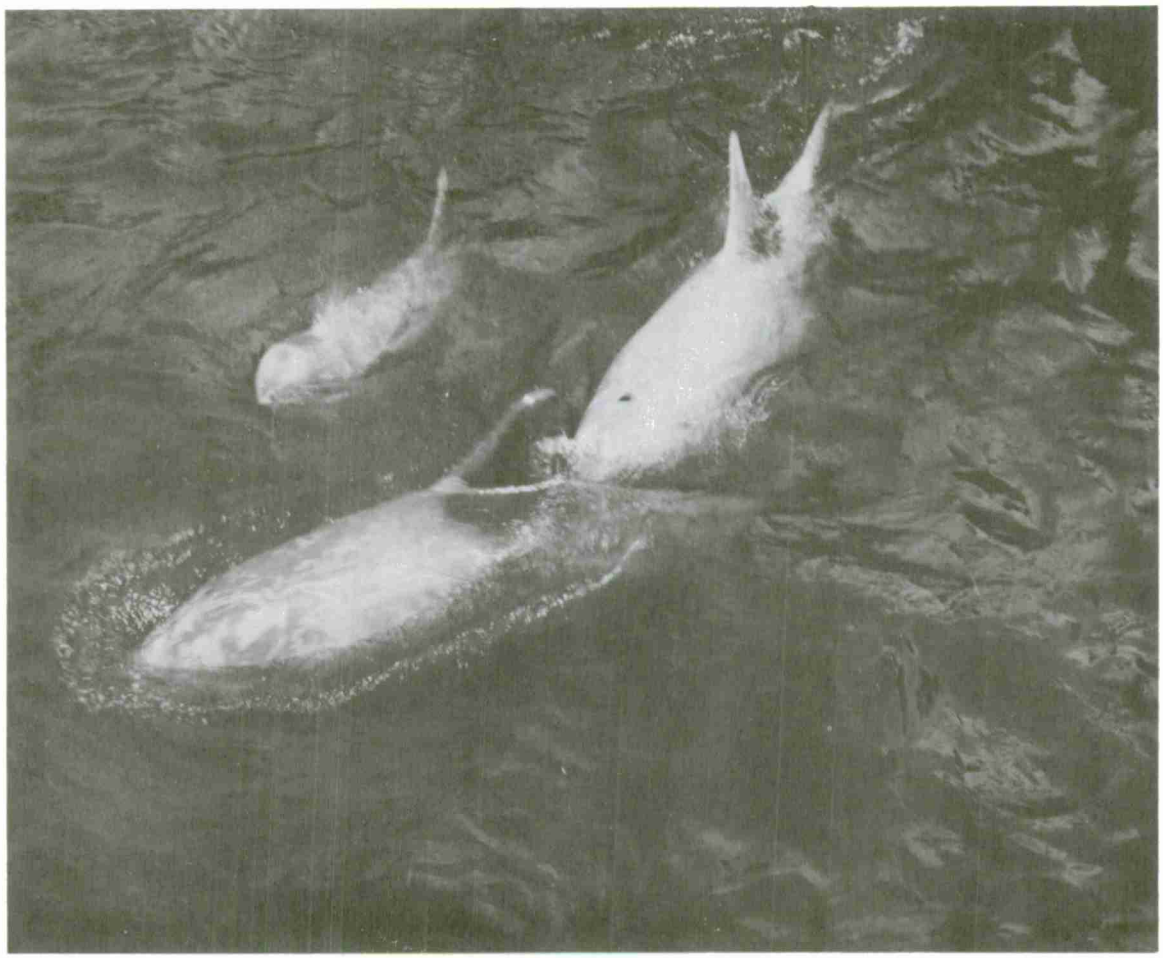


Figure 60. A small group of *Grampus* off Northern California. (photograph by W. J. Houck)

MEDIUM-SIZED WHALES WITHOUT A DORSAL FIN

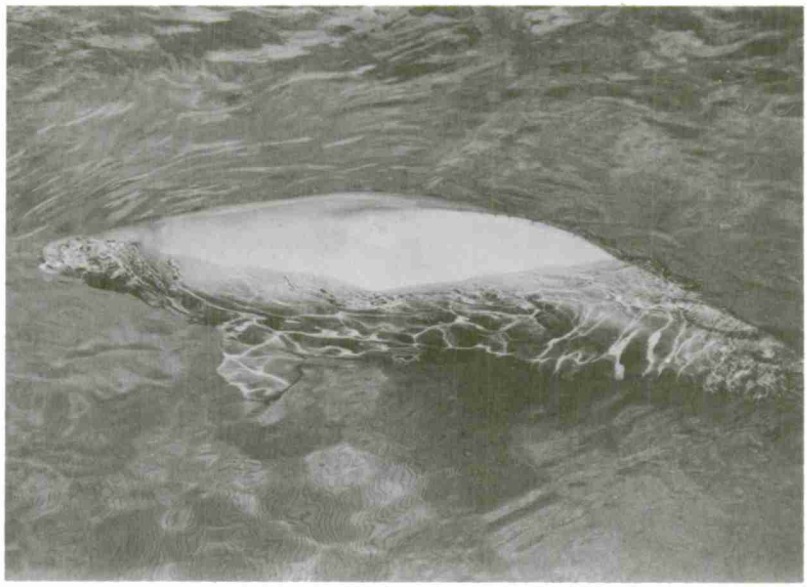
SECTION 17. BELUGA

Delphinapterus leucas Pallas, 1776

Belugas reach a maximum of 16 feet in length.

The bodies of adults are white; those of young belugas are slate gray.

These animals are found in Arctic waters and south to Cook Inlet, Alaska. They are primarily coastal in distribution. Because of their limited range in the Pacific, a detailed description of them is not included in this guide.



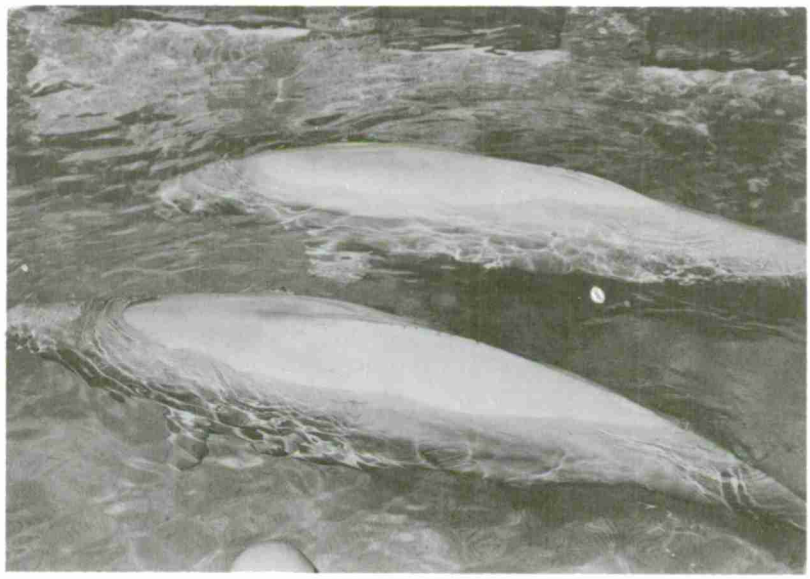


Figure 61. Surfacing beluga. Note the small, scalloped dorsal ridge and the all-white coloration. (photographs by Gil Hewlett)

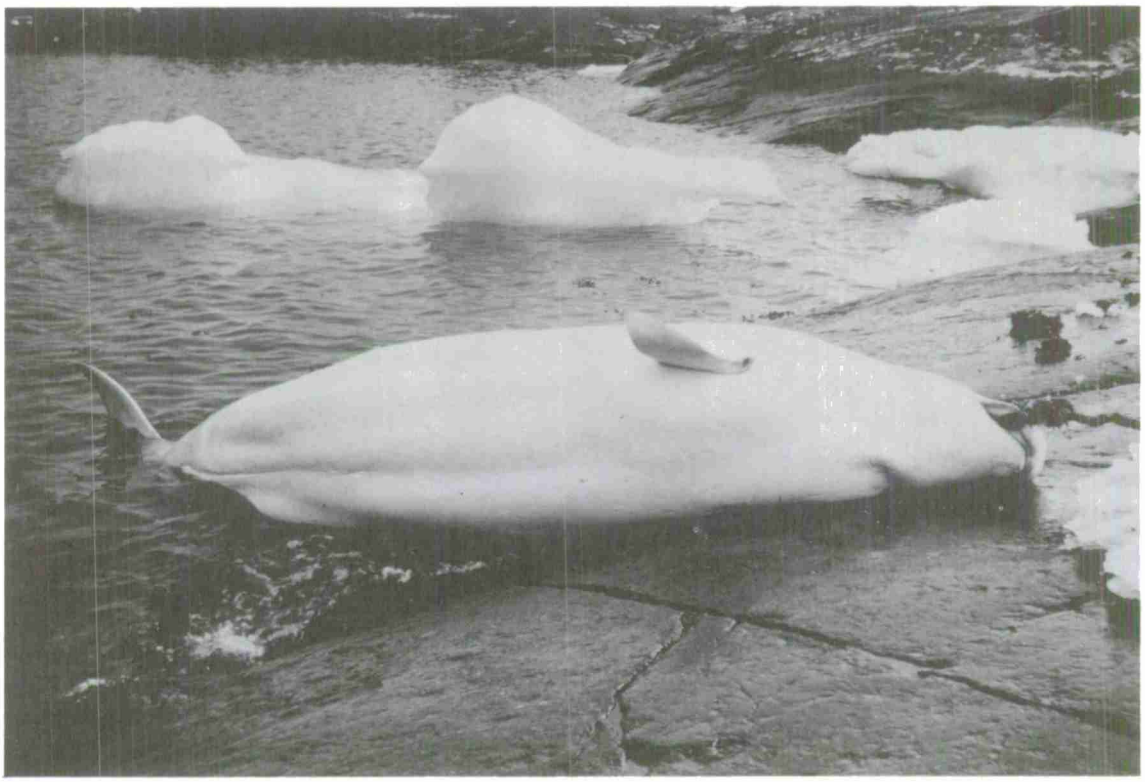


Figure 62. A beached beluga, showing the robust all-white body of the animal. (photograph by P. F. Brodie)

SMALL WHALES AND PORPOISES WITH DORSAL FIN

SECTION 18. SPOTTED PORPOISE

Stenella graffmani Lönnberg (in Eastern Pacific)
Stenella attenuata (in Central Pacific)

DESCRIPTION

This animal is called spotter porpoise by American tuna fisherman. Although there is considerable variation in details of coloration in even full-grown animals, spotted dolphins are basically gray to dark gray with light speckling or mottling. (Those around Hawaii and to the northwest along the Hawaiian chain of islands may lack spots.) The spotting pattern changes with age (see figure 63). The snout frequently has a white tip.

Spotters reach a length of nearly 9 feet and a weight of over 250 pounds.

The dorsal fin is distinctly backcurved.

MAY BE CONFUSED WITH

Around a boat, these animals behave very much like the white-bellied porpoise, frequently jumping clear of the water and darting back and forth erratically when they ride the bow wave. However, they may be distinguished from spinners and whitebellies on the bow in several ways. Whitebellies have a discrete white or light gray patch on the chest and stomach and an hourglass or crisscross pattern on the side. Spinners, except for those near Hawaii, have a more uniformly gray color and a triangular or even slightly forward-curved dorsal fin. Other characteristics which permit distinction between spotters and spinners are tabulated in Section 19.

DISTRIBUTION

Although spotted porpoises have reportedly been sighted as far north as San Diego, they are common from Cape San Lucas (23°N Latitude) to the equator and west at least to 140°W Longitude. Spotters also occur around Hawaii and to the northwest along the Hawaiian chain of islands. Throughout the range, spotters occur in schools that range in size from a few animals to well over 1,000, frequently mixed with spinners.

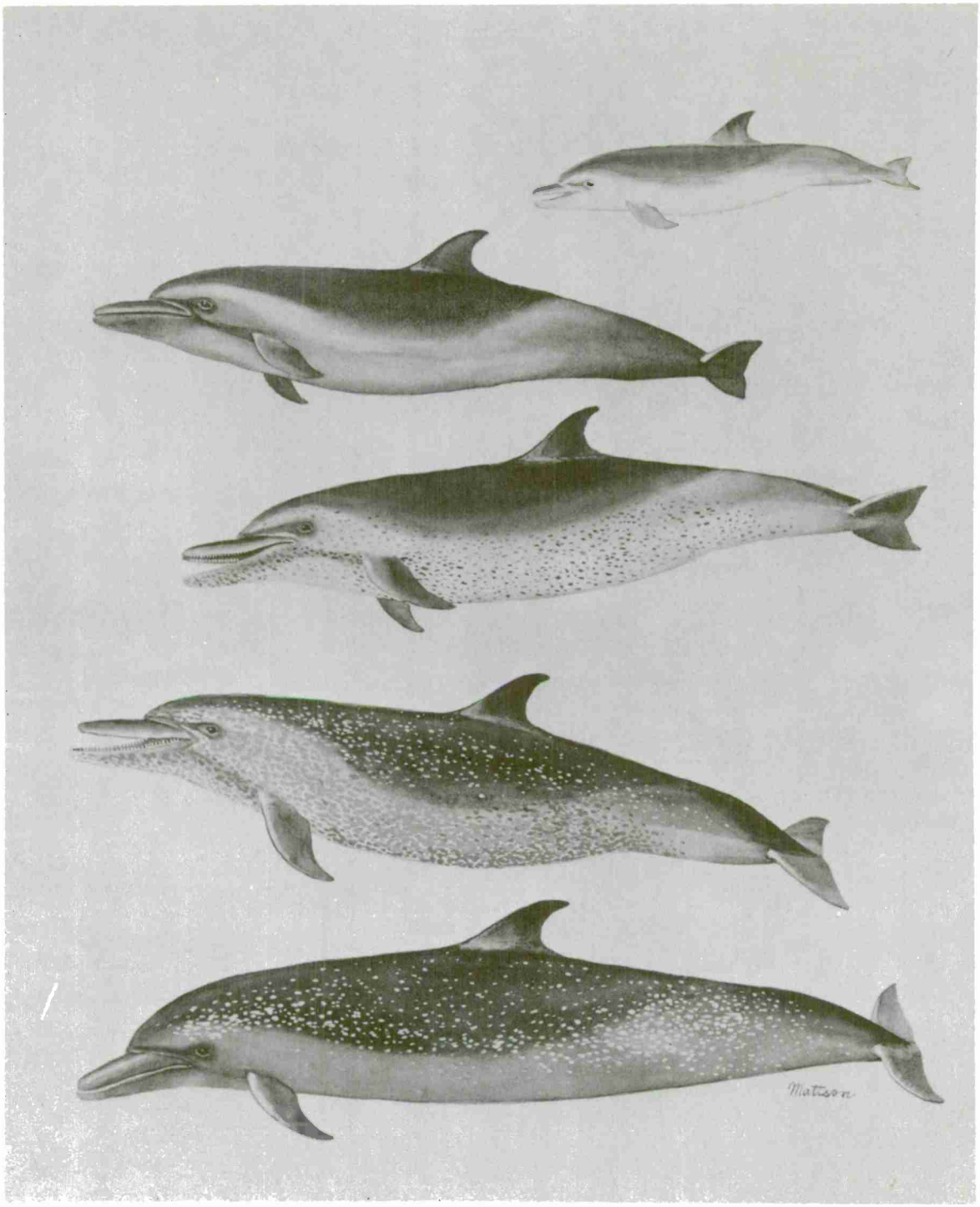


Figure 63. Development of spots in the eastern Pacific spotted porpoise, from top to bottom: newborn, juvenile, sub-adult(s), and adult coloration. (from Perrin, W. F., 1970, in Zoologica 54)

Figure 64. Spotter porpoise beside a boat off Mexico. Spotters, like whitebellies, frequently jump clear of the water and ride the bow wave. (photograph by K. C. Balcomb)

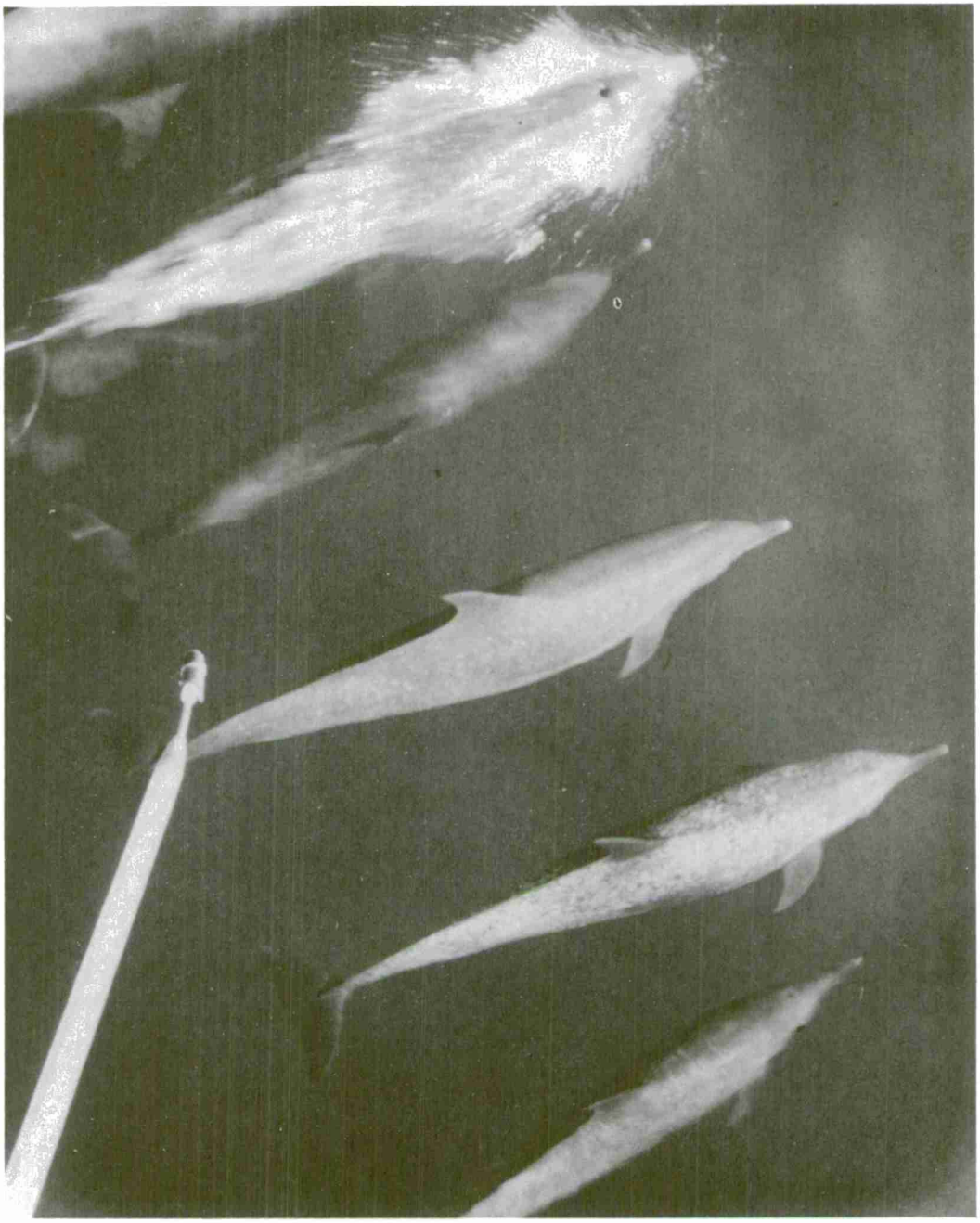


Figure 65. Spotter porpoises on the bow of a boat. Several stages of the various color patterns are visible. The pole is a harpoon tagging device which permits the application of a vinyl marker tag as the animals ride the bow wave. (photograph by R. L. Garvie)

SECTION 19. SPINNER PORPOISE

Stenella longirostris Gray, 1828, and
Stenella microps Miller and Kellogg, 1955, in Eastern Pacific
Stenella roseiventris Wagner, 1853, or *Stenella longirostris* Gray, 1828, in Central Pacific

DESCRIPTION

Spinners derive their common name from their habit of leaping clear of the water and spinning on their longitudinal axis, a behavior the reason for which is unknown. Individuals may rotate as many as seven times or more in one leap.

However, even when they are not spinning when encountered, spinner porpoises may be easily identified by several distinctive characteristics. The dorsal fin is generally very erect, in some animals actually curving forward (the Hawaiian spinners are an exception – their fin is slightly backcurved). The color is basically dark gray, with a white region on the belly ranging in extent from small patches of speckled white in the genital region and under the flipper, to a completely white underside. In the animals near Hawaii, the gray is lighter, revealing an underlying cape and showing three separate zones of color decreasing in hue from back to belly. The lower keel of adult males is often a pronounced hump.

In the eastern Pacific, spinners and spotters frequently occur together and both are found in association with large schools of tuna. Because they have been fished heavily in the eastern tropical Pacific during the last decade, neither species is likely to approach a boat. In fact, most herds begin "running", swimming very rapidly near the surface with very long flat jumps, whenever a vessel approaches. Those near Hawaii have not been harassed nearly as much and appear less frightened by vessels.

MAY BE CONFUSED WITH

The only similarly sized porpoises in the eastern Pacific with which spinners are likely to be confused are spotters and whitebellies. They can be most easily distinguished by their peculiar spinning behavior and by their triangular, erect dorsal fin. The dorsal fin of both other species is distinctly backcurved. The following tabular comparisons between spinners and spotters and between spinners and whitebellies may help distinguish between them:

Spinner		Spotter
Fairly uniform gray	**Coloration**	Gray with spots
Triangular; erect or even curved forward slightly	**Dorsal Fin**	Distinctly backcurved

Spinner	(Continued)	Spotter
Sometimes spins on long axis during leaps from water	Behavior	Frequently jumps but does not spin

Spinners may be distinguished from white-bellied porpoises by these differences:

Spinner		Whitebelly
Dark gray	Coloration	Hourglass pattern on side; very white belly
Triangular; erect or even curved forward slightly	Dorsal Fin	Distinctly backcurved
Sometimes spins on long axis during leaps from the water	Behavior	Frequently jumps but does not spin

Near Hawaii, spinners may be confused with rough-toothed dolphins, *Steno bredaneusis,* from a distance but are clearly marked and should be easily identifiable at close range.

DISTRIBUTION

Spinners, like spotters, are widely distributed in warm water around Hawaii and east of 140°W longitude. Although there are unconfirmed reports of sightings as far north as San Diego, they are common only south of 23°N latitude.

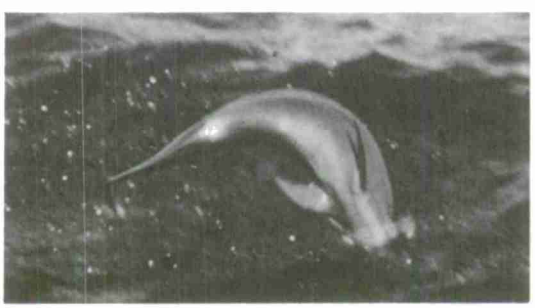
While those in the eastern Pacific are primarily offshore in distribution, those near Hawaii are frequently found near shore and several populations may be resident.

(1)

(2)

(3)

(4)



(5)

Figure 66. This sequence, indicated by numbers, illustrates the unique spinning behavior from which this species derives its common name. "Spinners" may make as many as seven revolutions or more on a single leap from the water. (photos from 16 mm movie footage by F. S. Hester, NMFS)

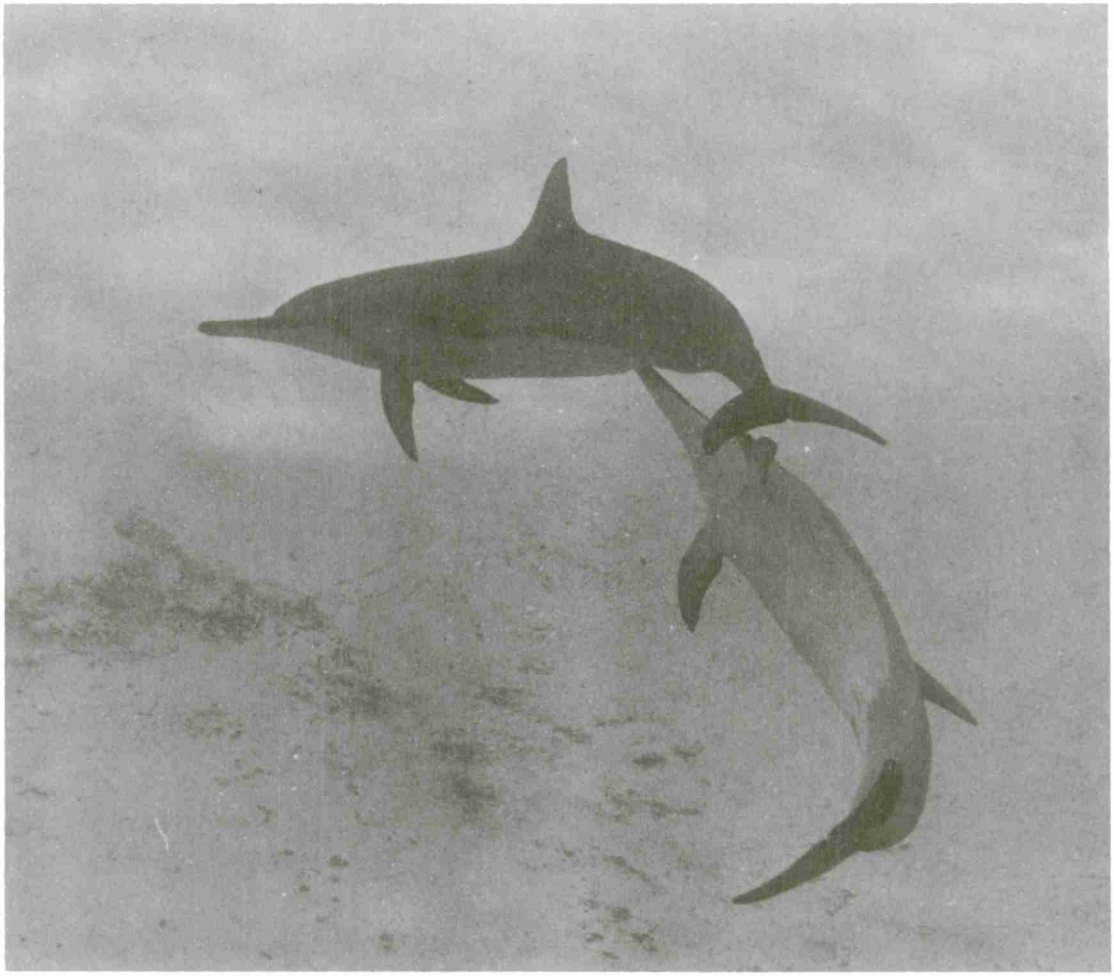


Figure 67. Hawaiian spinners. The most striking features are the very erect dorsal fin, the long slender snout, and the white belly. (photograph by W. E. Evans)

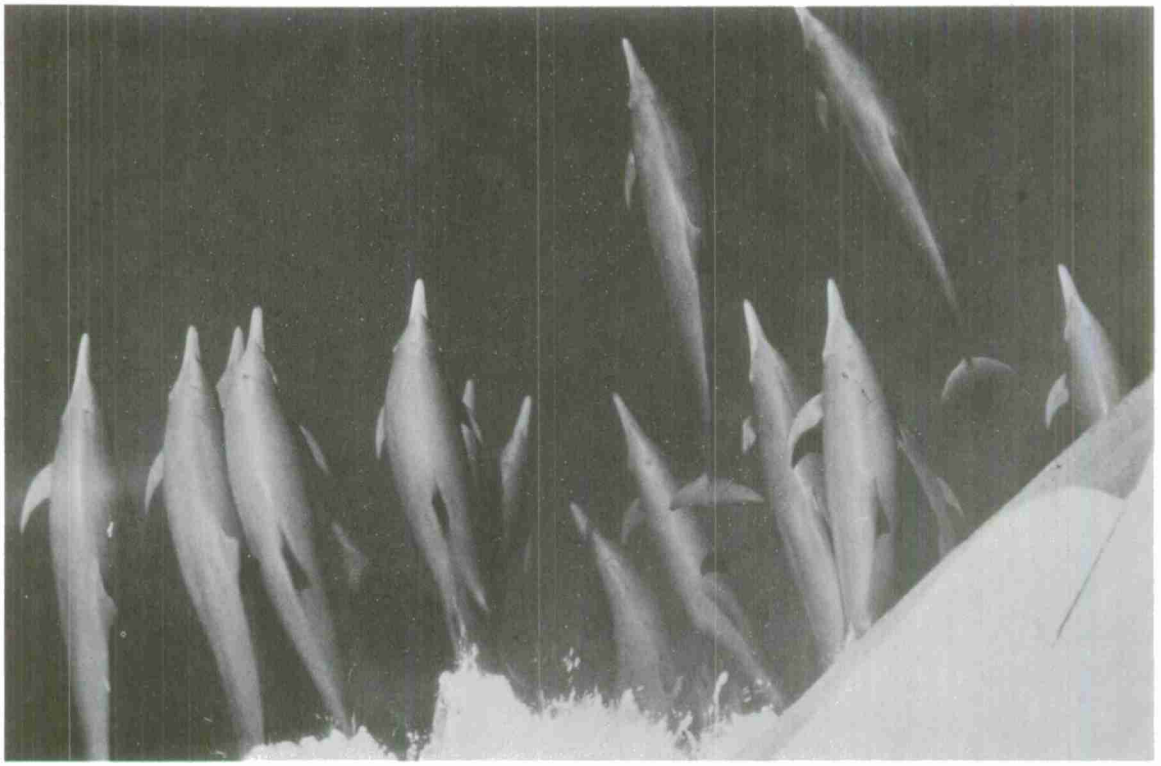


Figure 68. Spinners on the bow of a boat off Mexico. Even from this angle, the erect dorsal fin is evident. (photograph by Roger Green, NMFS)

Figure 69. A small herd of "Hawaiian spinners" very near the island of Hawaii. Even at a distance, spinners are identifiable by their very erect, triangular dorsal fin. (photograph by W. E. Evans)

SECTION 20. STRIPED DOLPHIN

Stenella caeruleoalba Meyen, 1883

DESCRIPTION

The striped dolphin, called streaker porpoise by tuna fishermen in the tropical Pacific, is a widely distributed relative of the spinners and spotters, which, when seen at sea, more closely resembles the white-bellied porpoise, *Delphinus delphis,* than either the spinner or the spotter. It reaches a length of at least 10 feet, and is characterized by a distinctive band of black which begins near the eye and extends down the side of the body to the anus and by a finger of black coloration which extends from the black area of the dorsal fin forward about half way to the eye. The back is bluish, the sides are gray, and the belly is gray or white.

Though little is known of this animal, it has been reported in rather large herds in at least one area and apparently exhibits behaviors similar to those of the white-bellied porpoise, frequently jumping clear of the water. Herds seen near Cabo San Lucas, Baja California, refused to bow ride and remained several hundred yards away from a pursuing research vessel. Individuals of what was probably this species have been seen with Pacific white-sided porpoises outside San Clemente Island, California, in the springtime. A large herd was seen near Clipperton Island in December, 1971.

MAY BE CONFUSED WITH

This species is most likely to be confused with the white-bellied porpoise which it closely resembles. It may be distinguished however, by differences in maximum size and in coloration.

Striped Dolphin		White-bellied Porpoise
10 feet or more	Length	Seldom greater than 8 feet
Back bluish, sides gray, belly gray or white	Coloration	Back basically black or brownish; distinct white chest or belly patch; hourglass or crisscross pattern on the sides

DISTRIBUTION

Striped dolphins have been reported from widely separated locations in the eastern Pacific. One group has been sighted reportedly east, southeast of Cabo San Lucas in the mouth of the Gulf of California, and individuals of what was probably this species were seen with Pacific white-sided dolphins outside San Clemente Island. Individuals have been collected from both temperate and tropical waters so it is reasonable to assume the species is widespread in its distribution. Though they have been seen only rarely in well patrolled inshore waters of the eastern Pacific, striped dolphins may be distributed far offshore.

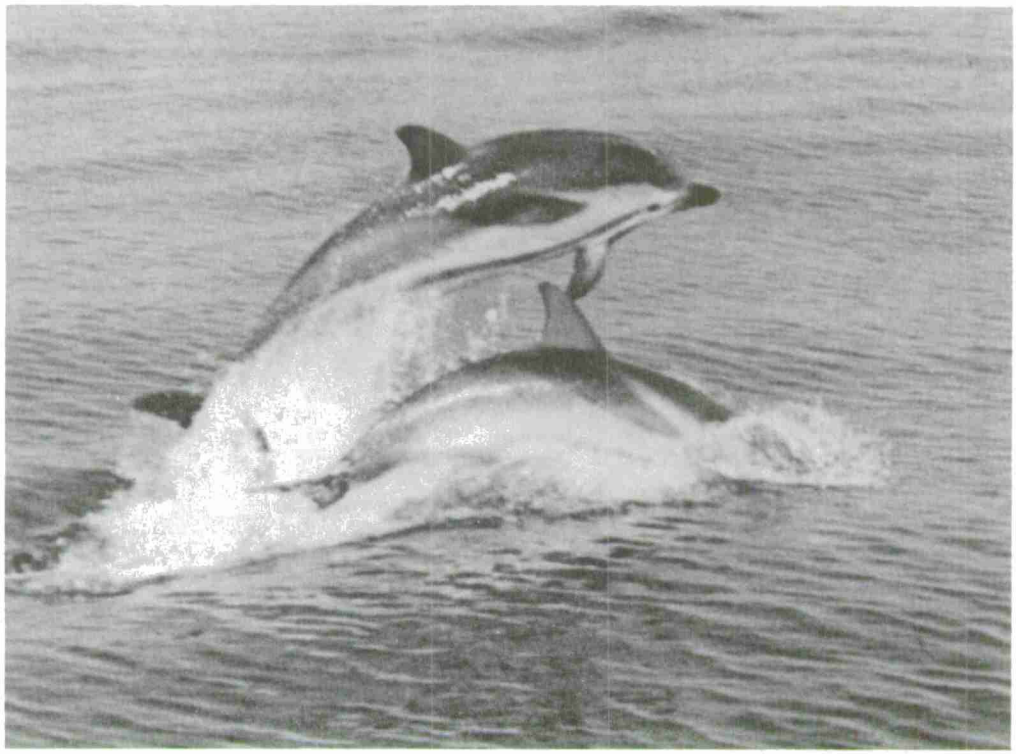


Figure 70. Despite their striking similarity to white-bellied porpoises, these animals can be identified as striped dolphins by the prominent streaking on the sides of the body. (photograph by Alberto Laviano courtesy of Mondo Sommerso)

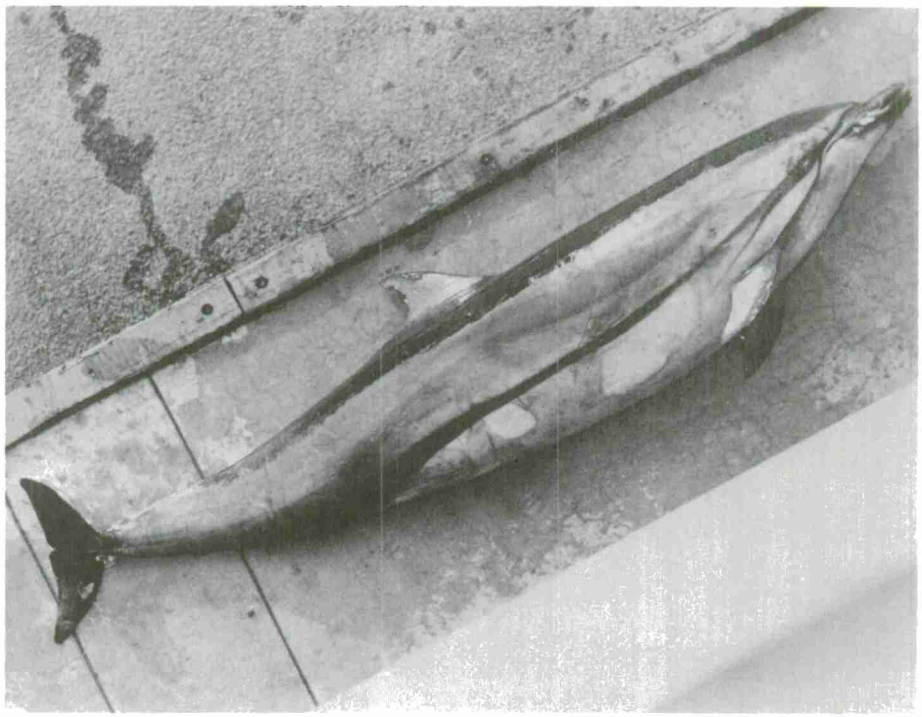


Figure 71. The most distinctive feature of this streaker porpoise is the pair of black stripes or streaks on each side of the body. One runs from the eye to the flipper. The other begins at the eye, widens on the flank, and joins the stripe from the other side near the anus. (photograph by W. F. Perrin)

SECTION 21. WHITE-BELLIED PORPOISE

Delphinus delphis Linnaeus, 1758

DESCRIPTION

The white-bellied porpoise, also known as the saddleback dolphin or the common dolphin, reaches a length of over 8 feet. It is often seen in large herds (over 2,000 animals). Up close, it is distinctly marked with a white chest or belly patch and an hourglass or criss-cross pattern on the sides. The back is basically black or brownish black but this color, the extent of the striping marks, and the degree of color distinction between the different zones is highly variable. The dorsal fin is variable in shape and color but is most often slender and slightly backcurved.

In Southern California waters, white-bellied porpoises have been found to move along major features of bottom relief (viz., escarpments) and to follow patterns of movement, feeding and "resting" throughout the day. They have been shown to dive through the vertically migrating deep scattering layer to feed on lantern fishes and squid.

White-bellied porpoises, like white-sided porpoises, are in some parts of their range active bow riders and may come to a moving vessel from a considerable distance, leaping much of the time. Once on the bow they often ride for extended periods of time.

MAY BE CONFUSED WITH

White-bellied porpoises may easily be confused with streaker porpoises and must be examined closely to be distinguished from them. Streaker porpoises are larger (to 10 feet) and have two distinctive streaks of black down the sides. White-bellied porpoises, on the other hand, have an hourglass pattern on the side of the body with a stripe of dark gray or black from the eye to the flipper and another from the eye to the anus. They have a distinctive white belly and chest, from which they derive their common name.

From a distance they might also be confused with Pacific white-sided porpoises though the taller, more backcurved dorsal fin of the latter should permit identification. Further differences between the two species are tabulated in Section 22.

DISTRIBUTION

The northernmost record of whitebellies in the eastern Pacific was of a dead beached animal in Victoria. Live animals have not been seen, however, north of Santa Cruz, California – and those sightings north of Point Conception have generally been made in spring and summer when fingers of warm water extend northward. The normal range is probably restricted to waters from San Miguel Island south to the end of Baja California,

into the Sea of Cortes and along the mainland coasts of Mexico and Central America in continuous distribution. They are also found hundreds of miles offshore in tropical waters.

There are two "types" of whitebellies off Baja California and Southern California. Their ranges appear different. Long-nosed animals live generally south – short-nosed animals generally north – but the populations overlap in a transition zone off San Diego. The position and width of that transition zone shifts as a function of time of year and resultant changes in water conditions along the coast. The status of whitebellies further to the south, off Costa Rica, is not known.

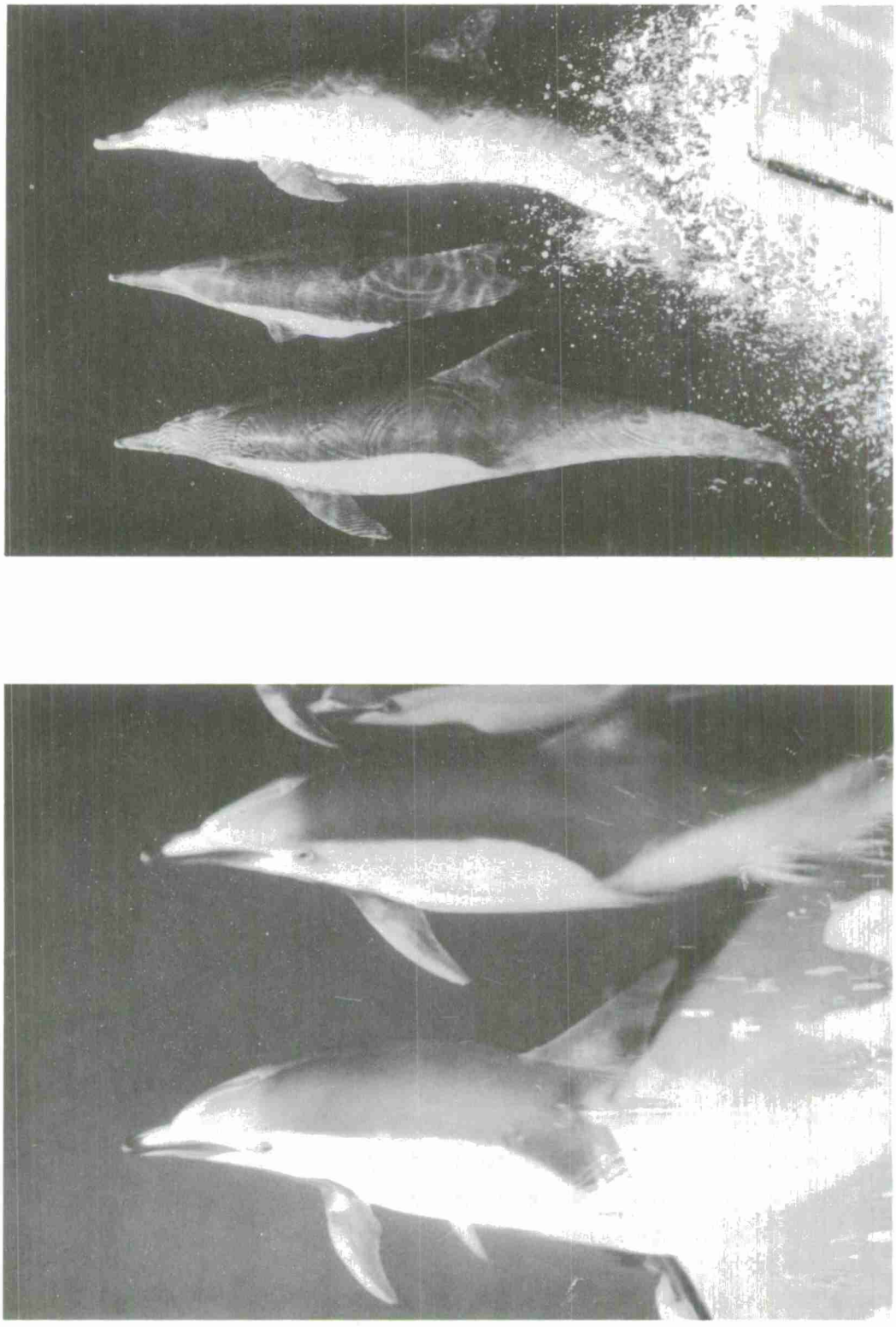


Figure 72. These two recognizably different animals are both white-bellied porpoises, or common dolphins. (top) This variety is more likely to be seen from San Diego south. (bottom) These animals are most commonly seen in the Catalina Channel and in the northern limits of the white-belly's range. These ranges are not fixed, however, and overlap considerably as well as shifting from north to south seasonally. (photographs by K. E. Balcomb, top, W. F. Perrin, bottom)

Figure 73. Whitebellies off North Coronado Island. The extensive region of white on the chest and stomach, from which these animals derive their common name, and the hourglass or criss-cross pattern on the side is clearly evident. (photograph by W. E. Evans)

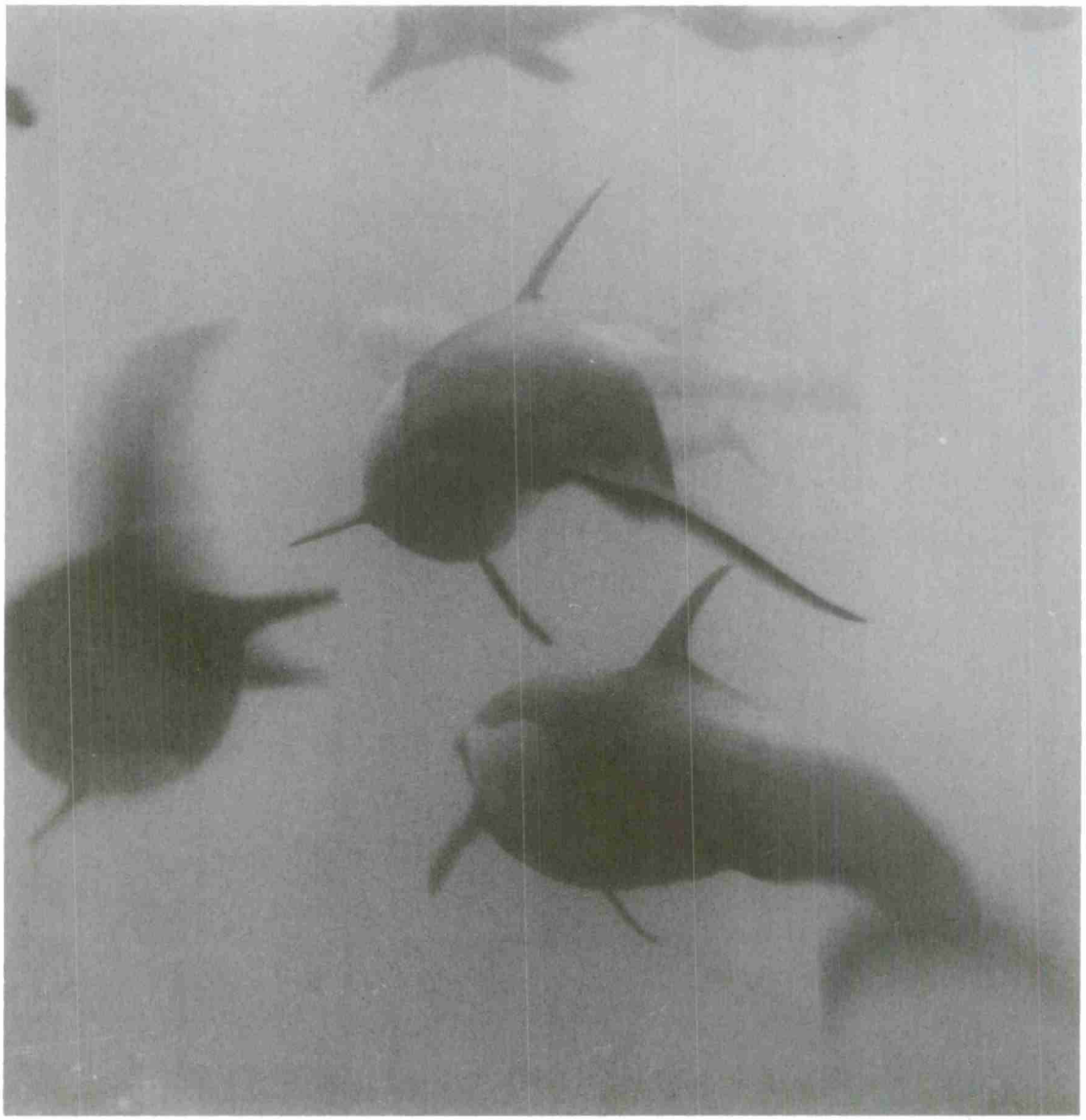


Figure 74. Whitebellies underwater as seen from the submerged viewing ports of the R/V Sea See. (photograph by W. E. Evans)

Figure 75. Whitebellies frequently jump clear of the water and may re-enter in a variety of ways: (1) smoothly head first, (2) with a chin slap, (3) with accompanying tail lob, or (4) with a splash on the side or back. This habit enables them to be spotted from a considerable distance. When stressed, herds bunch together tightly like the group in this photograph. (photograph by S. Leatherwood)

SECTION 22. PACIFIC WHITE-SIDED DOLPHIN

Lagenorhynchus obliquidens Gill, 1865

DESCRIPTION

The Pacific white-sided dolphin, a common resident along much of the Pacific coast, is a short-beaked dolphin which reaches a length of over 7 feet and a weight of approximately 300 lbs. Its large sickle-shaped dorsal fin is pale gray on the hind margin and black in front, prompting some fishermen along the Pacific coast to refer to them as hook-finned porpoises. Individuals are black on the back with striking light gray sides and a white belly. The black color of the back is interrupted on each side of the dorsal fin by a white stripe, which begins just behind the head, continues along the back to the area of the dorsal fin and then widens and curves towards the anus. When these animals ride the bow wave, these white stripes are clearly visible and permit easy identification.

White-sided dolphins are vigorous swimmers and like white-bellied porpoises often leap clear of the water. Jumping white-sided dolphins often drop into the water on their sides or bellies, hitting with a resounding smack that can be heard at a great distance. In addition, individuals may somersault, a behavior not described for any other species in the world.

White-sided dolphins and white-bellied porpoises often travel together, forming huge herds of up to 2,000 animals. They may also be found with northern right whale dolphins and on at least one occasion were reported with streaker porpoises. On several occasions they have been seen forcing whitebellies to abandon the preferred riding position on the bow of a moving vessel. This dolphin is often seen feeding during the early morning hours in the company of sea birds and California sea lions.

MAY BE CONFUSED WITH

In its range, the Pacific white-sided dolphin is most often confused with the white-bellied porpoises and Dall's porpoise. It may be distinguished from the whitebelly by its taller, more recurved dorsal fin, by its very short beak, by the two white stripes down the back, and by the fact that the southern extent of its range (from about Point Conception, California, to near the tip of Baja California) corresponds to the northern extent of the whitebellies.

In its more northern areas, the white-sided dolphin may also be confused with Dall's porpoise at a distance. Both are vigorous swimmers and may splash considerably. The white-sided dolphins, however, habitually leap clear of the water where the distinctive differences between its body shape and color and those of Dall's porpoise obviate the likelihood of confusion. Dall's porpoises do not jump.

DISTRIBUTION

The Pacific white-sided dolphin is found from Alaska south at least to Magdalena Bay in Baja California.

Figure 76. This Pacific white-sided dolphin, or hook-finned porpoise, has no beak, a bicolored, hooked dorsal fin, and different basic color patterns than the white-bellied porpoise, with which it is frequently seen. (photograph by A. B. Irvine)

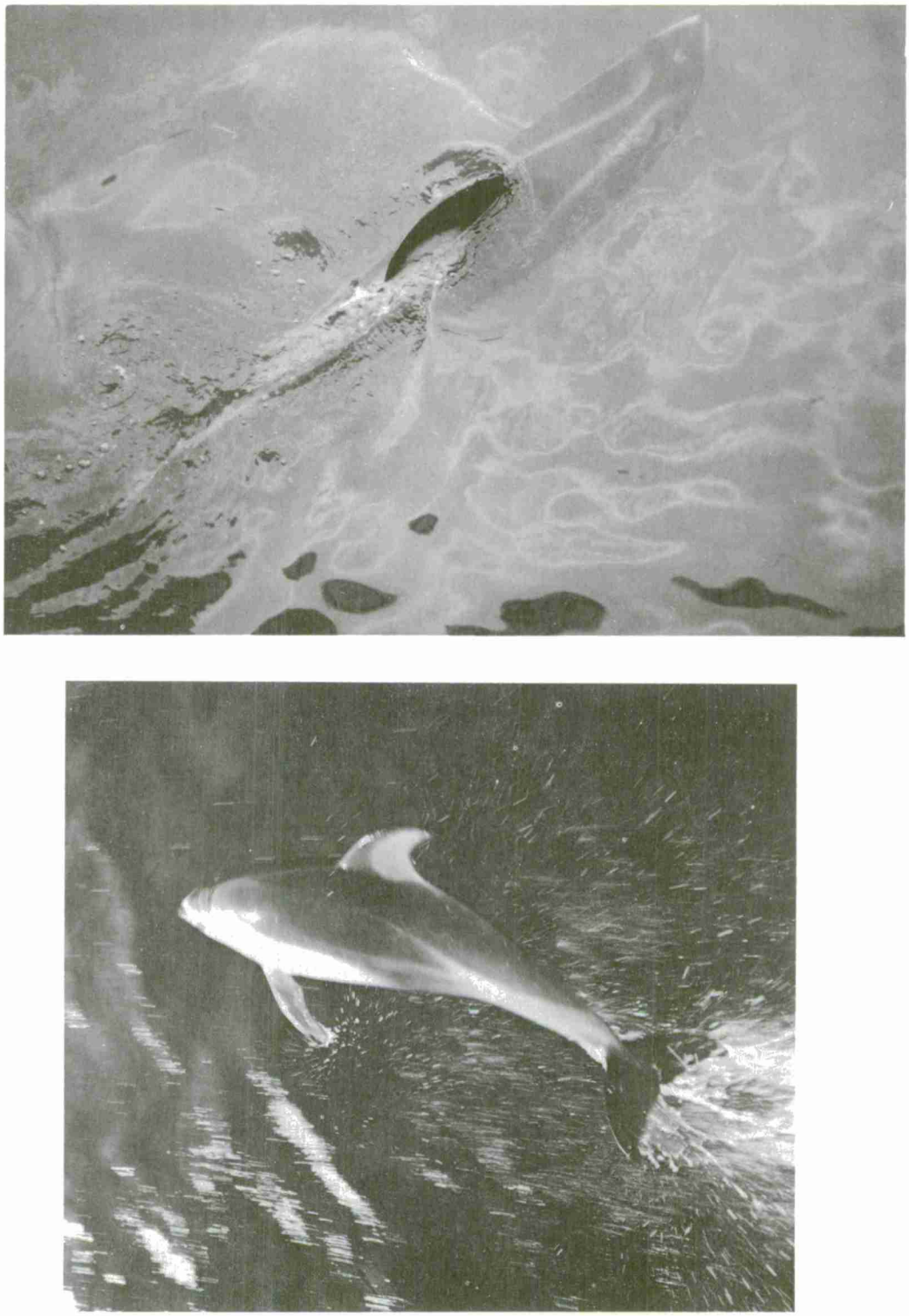


Figure 77. Both these photographs of white-sided dolphins show the distinctive head and dorsal fin and the characteristic stripes from the head, past the dorsal fin to the flanks. (lower photograph, W. F. Perrin; upper, W. E. Evans)

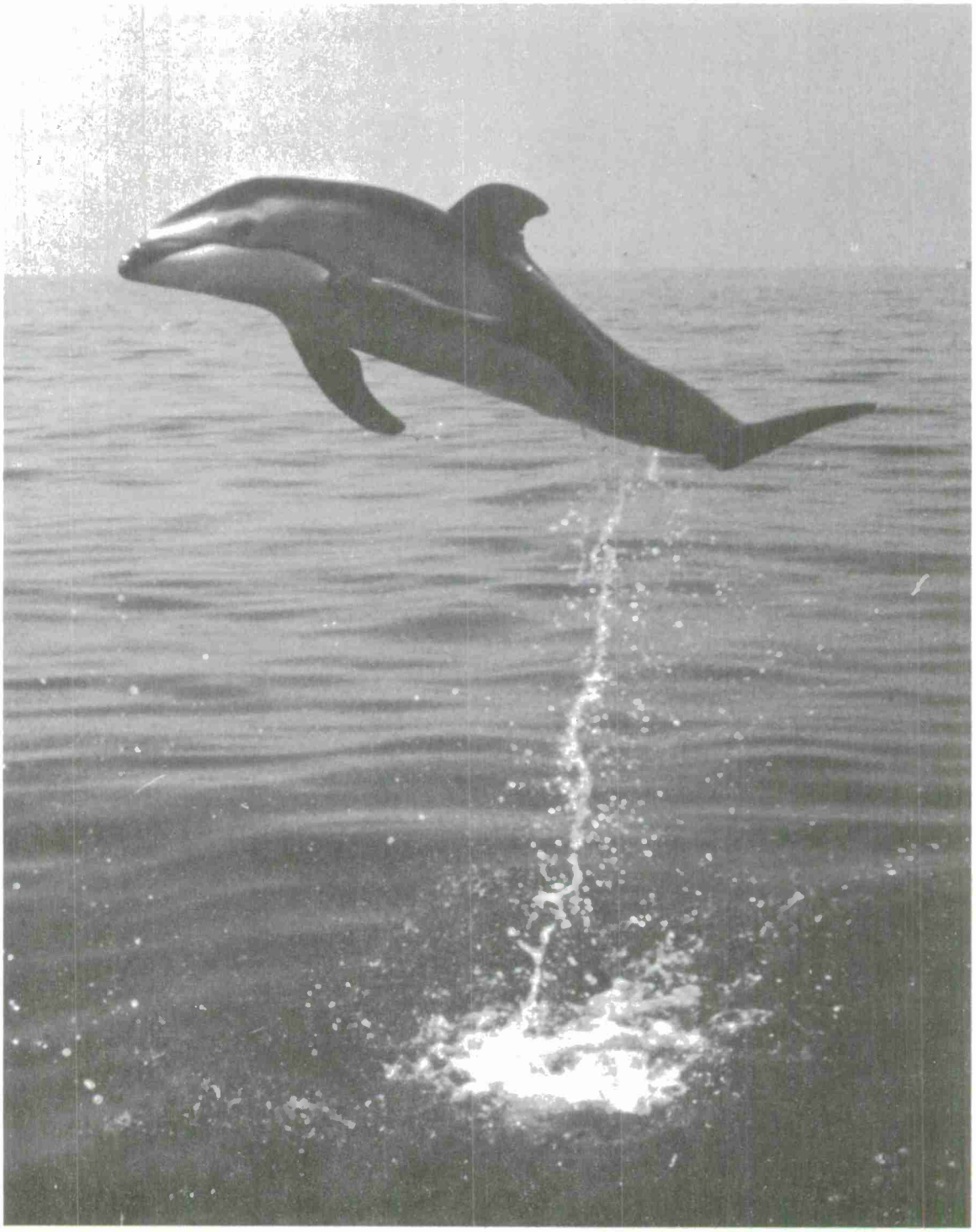


Figure 78. White-sided dolphins frequently jump clear of the water, as this one is doing off Point Mugu, California. They sometimes somersault. (photograph by J. D. Hall)

Figure 79. A white-sided dolphin riding the stern wave of a vessel off Point Mugu, California. (photograph by A. B. Irvine)

SECTION 23. SHORTSNOUTED WHITEBELLY DOLPHIN

Lagenodelphis hosei Fraser, 1956

DESCRIPTION

The shortsnouted whitebelly dolphin, also known as Fraser's porpoise, is extremely short-beaked and has a pronounced dark stripe extending back from the eye. It is robust in build and has rather small flippers and dorsal fin relative to its body size. The dorsal fin is slender, backcurved and pointed on the tip. The body is gray on the back and sides and white on the belly. A dark band runs from flipper to mouth. The flippers are dark on both sides.

This animal, called "a type of whitebelly porpoise" by tuna fishermen, is by all accounts quite common in certain areas of the eastern tropical Pacific frequented by tuna seiners and is occasionally captured with schools of spotted porpoise. Despite their abundance, the first specimens to have been seen at close range by scientists were not collected until 1971, when photographs were taken of a large male and a calf was collected from a group of 25 in a purse seine haul several hundred miles off Costa Rica. The animal has been only tentatively identified as belonging to the species *Lagenodelphis hosei*, which was described in 1956 from a single skeleton collected at Sarawak in the South China Sea in 1896 and not recorded subsequently. Positive identification must await more detailed studies. Because so little is known about this species, any sightings or specimens will be particularly important in beginning to describe the basic aspects of the animal's biology and should be reported in detail as soon as possible.

MAY BE CONFUSED WITH

Though it might be confused with the white-sided and white-bellied porpoises, in the areas in which it has been reported, this dolphin is probably more likely to be confused with streaker porpoises. Streaker porpoises, however, have a long beak and generally more slender build. In addition, this dolphin has very small appendages relative to its body size.

DISTRIBUTION

Since the collection of specimens from the tuna fishery, specimens have also been collected in Australian and South African waters. Also, photographs taken several years ago of a school of dolphins in the central Pacific have been shown to be of this animal. These records suggest that the species is to be expected in all tropical waters of the Pacific and Indian Oceans.

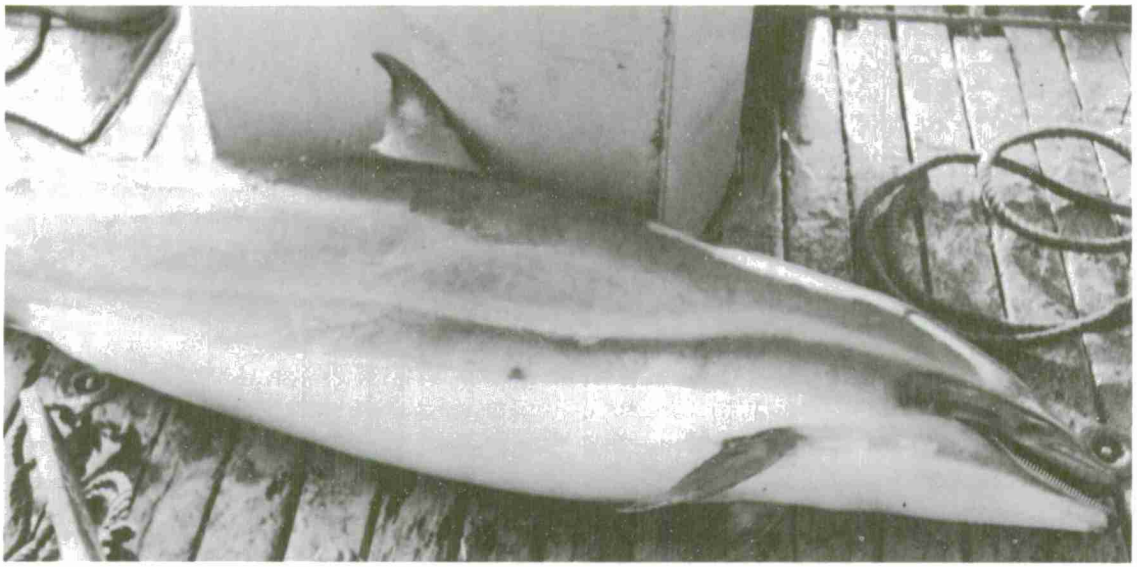


Figure 80. This tropical relative of both the white-sided dolphin and the white-bellied porpoise has been seen only a few times. It can be distinguished from both of its temperate and inshore counterparts by its coloration and its small appendages relative to its body size. (photograph by John LaGrange)

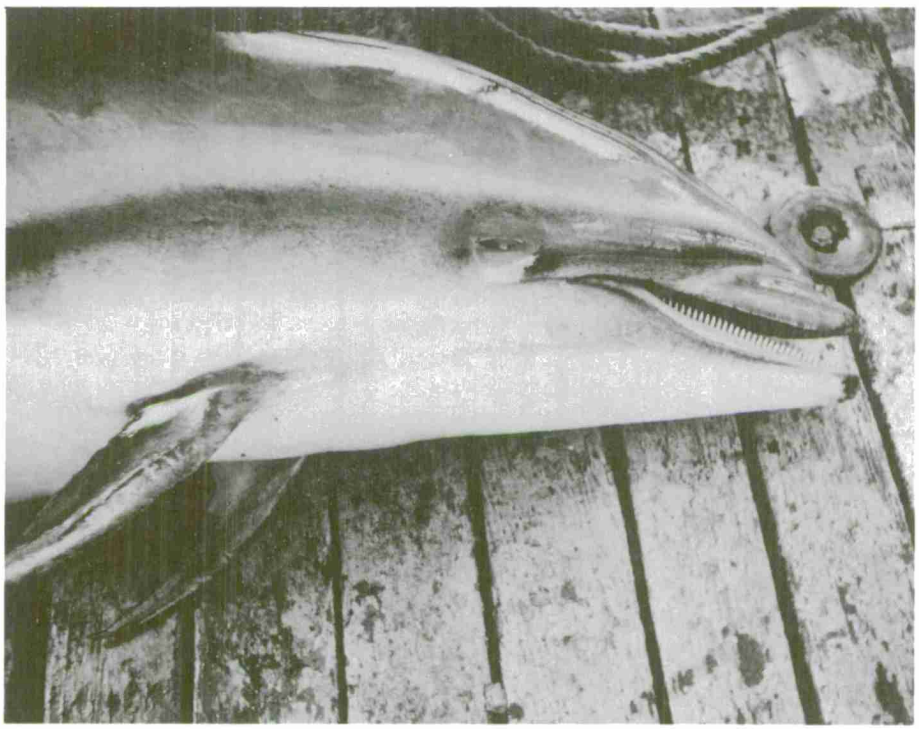


Figure 81. The head of this Fraser's porpoise is more beaked than a white-sided dolphin's but less beaked than a white-bellied porpoise's. (photograph by John LaGrange)

Figure 82. Fraser's porpoises are definitely identifiable in their tropical range by the short snout, the dark flank stripe, and the small dorsal fin and pectoral flippers. (photograph by K. C. Balcomb)

SECTION 24. DALL'S PORPOISE

Phocoenoides dalli True, 1885

DESCRIPTION

Dall's porpoise is a distinctively marked cold water species which may be readily identified on the bow of a vessel by several characteristics: (1) the prominent white patch on the flanks and belly which extends from about midway on the body nearly to the tail flukes, (2) the white markings on the dorsal fin and on the upper trailing edge of the flukes, and (3) the overall body shape, particularly the head and the very robust midsection, which is very unlike that of any other animal in the eastern Pacific. In addition, there is a prominent keel on the top and the bottom of the tail. As it rides the bow, Dall's porpoise moves very quickly and jerkily, darting in and out of the bow wave with amazing quickness.

Even when it does not come in to ride a moving vessel's bow wave, however, Dall's porpoises are a thrill to see and may be easily identified. It does not jump clear of the water, but when it is making a high speed run, as when it is attempting to overtake or avoid a boat, or when it is feeding, its entire body may be obscured by the "rooster tail" of spray it puts out from its head as it surfaces to breathe. Dall's porpoise reaches a length of over 7 feet, and though it normally travels in small groups (2-15) in Southern California waters, herds of over 500 have been reported from the Alaskan Coast. They are sometimes found with Pacific white-sided dolphins and at least in the area of the Northern California Channel Islands are often seen in small groups near Pacific pilot whales.

MAY BE CONFUSED WITH

When they can be examined at relatively close range, the very distinctive characteristics of Dall's porpoises make it highly unlikely that they will be confused with any other species. From a distance, however, they may be confused with Pacific white-sided dolphins which also may put up a "rooster tail" as they swim at high speed. The Dall's porpoises have a smaller, more triangular dorsal fin and a distinctive white patch on the chest and belly. White-sided dolphins, on the other hand, have a taller falcate dorsal fin and more varied coloration. Reports of groups of baby killer whales were probably prompted by sightings of Dall's porpoises, but the two species should be easy to distinguish because of differences in overall size and in the size and shape of the dorsal fin.

DISTRIBUTION

The Dall's porpoise is a frequent visitor to the south/central California coast from October through June. In the winter time, it has been reported off San Diego, Cedros Island, and even as far south as Bahia de Ballenas off the coast of Baja California, presumably taking advantage of the unseasonable invasion of cold water currents into those areas. Throughout the rest of the year, however, this animal prefers the cold waters found off the coasts of Alaska, Canada, Washington, Oregon, and Northern California, and is seldom seen south of 35°N latitude.

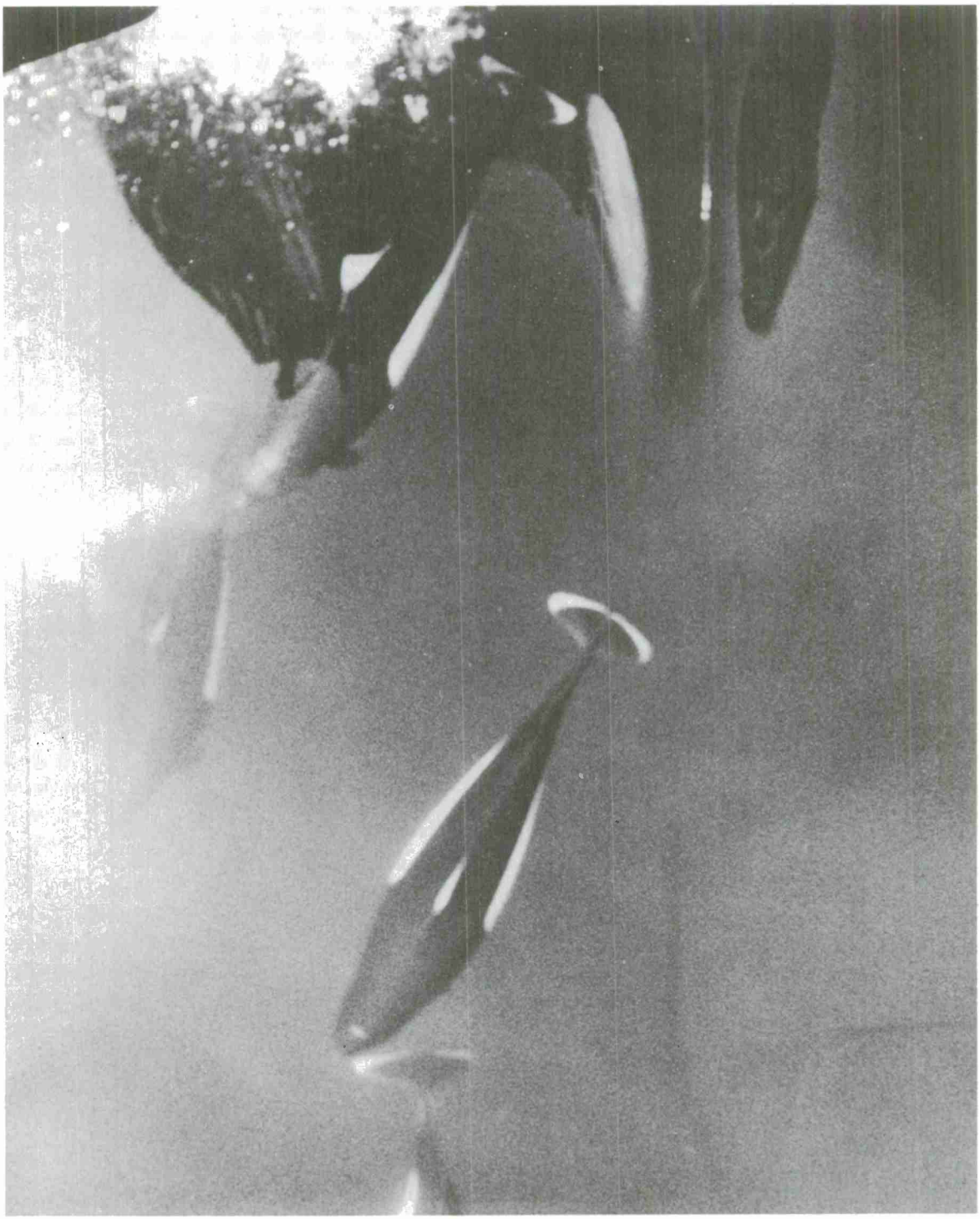


Figure 83. On the bow wave, Dall's porpoises may be identified by (1) the prominent white belly patch which extends from about midway on the body nearly to the front of the tail flukes, (2) the white marks on the dorsal fin and the trailing edge of the fluke, and (3) the robust body and sharply pointed head, very unlike any other animal in our area. (photograph by K. C. Balcomb)

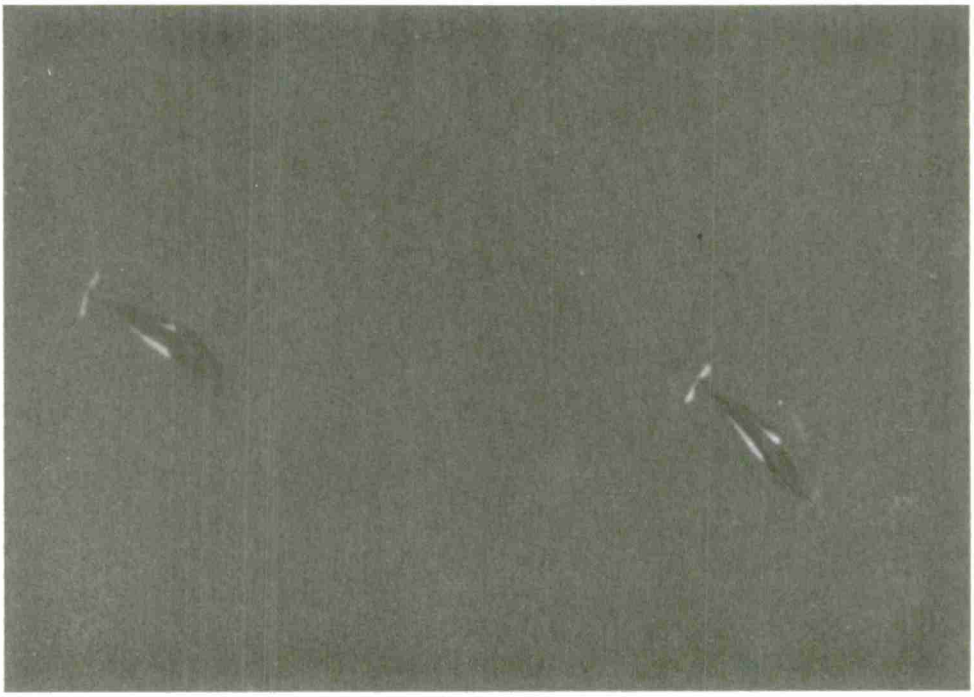


Figure 84. Even from the air, the white zones and body shape of Dall's porpoises permit easy identification. (photograph by S. Leatherwood)

Figure 85. A Dall's porpoise beside a research vessel off San Clemente Island, California. (photograph by Dr. Raymond Gilmore)

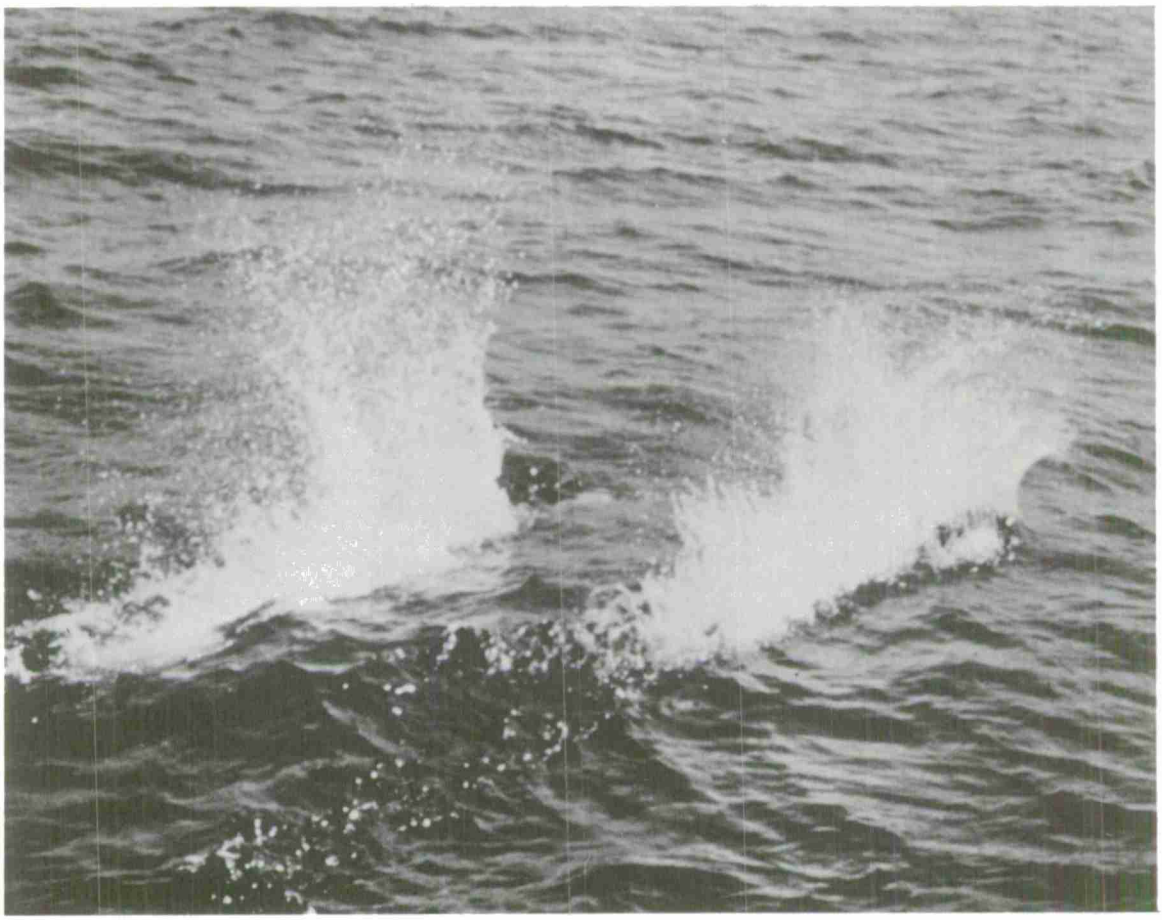


Figure 86. The characteristic appearance of Dall's propoises at sea. These vigorous swimmers frequently put out a "rooster tail" from the head as they surface to breathe. (photograph by Ken Sexton)

SECTION 25. HARBOR PORPOISE

Phocaena phocaena Linnaeus, 1758
Phocaena sinus Norris and McFarland, 1958

DESCRIPTION

The harbor porpoise, also known as the Gulf of California porpoise, is the smallest cetacean in the eastern North Pacific, reaching a maximum length of about 5 feet. It is characterized by a rather small triangular dorsal fin and a chunky body with a rounded head and an extremely small indistinct beak. Its body is dark gray above and white below with a transitional speckled zone on the sides.

As the name implies, the harbor porpoise inhabits bays, harbors, river mouths, and relatively shallow inshore waters. Though it may travel in schools of nearly a hundred individuals it is more often seen in pairs or in small groups of from five to ten individuals. It swims quietly at the surface. It will not ride the bow wave and is very difficult to approach closely by boat.

MAY BE CONFUSED WITH

The harbor porpoise is not known to associate with other porpoises; because of its northern inshore habitat, it will probably not be confused with the only other species found inshore, the bottlenose dolphin.

DISTRIBUTION

This small porpoise is a frequent visitor to the bays and harbors from Morro Bay, California, north to Point Barrow, Alaska, and may be abundant in the Bering Sea.

A similar species, *Phocaena sinus,* has been reported only from the Gulf of California.

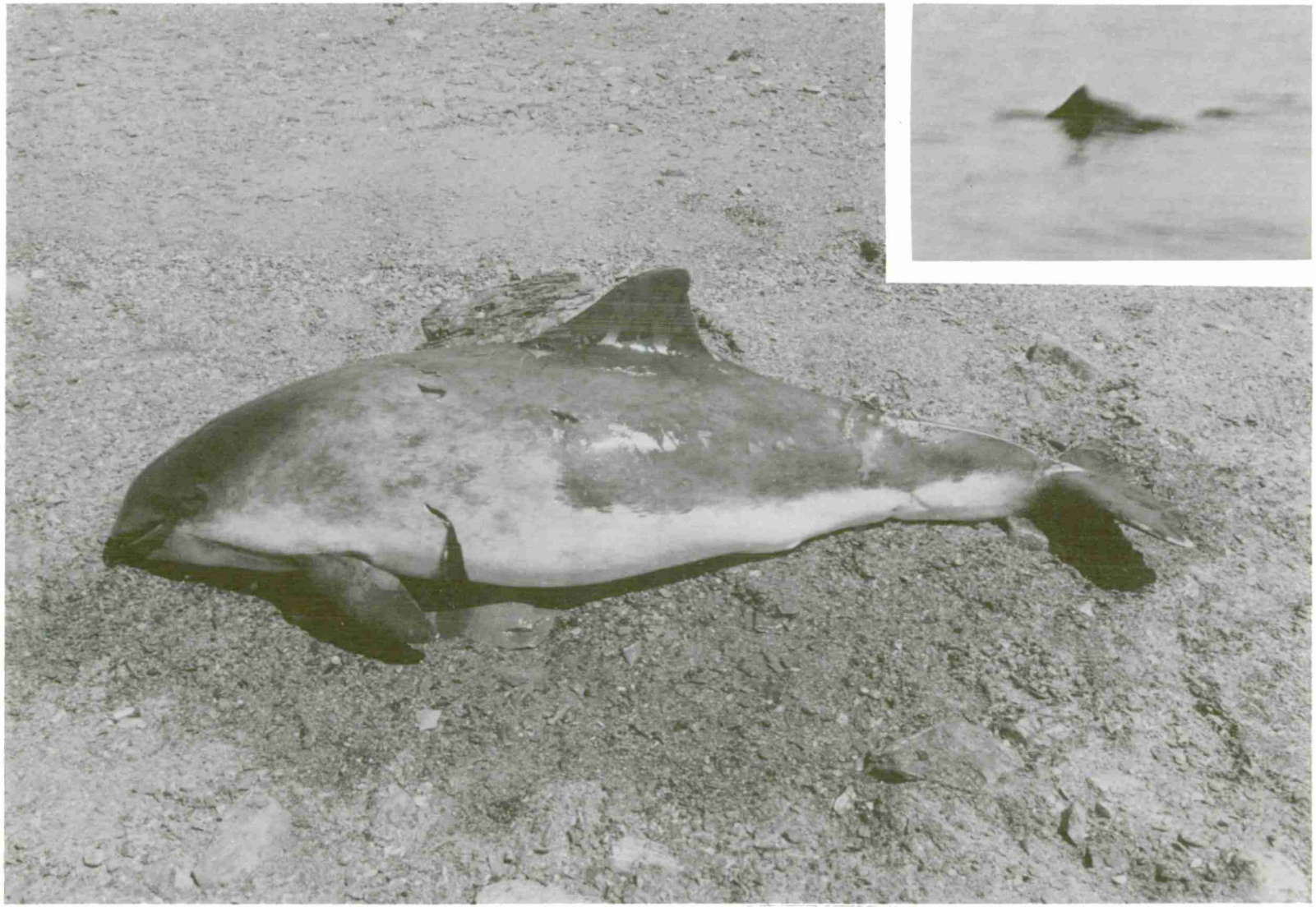


Figure 87. A stranded harbor porpoise. Note the rounded dorsal fin and the basic body coloration, dark above and white below with an indistinct border between them. The insert shows a harbor porpoise surfacing to breathe. These animals are often seen only this way, well off in the distance, swimming with very little commotion. (photographs by W. J. Houck)

SECTION 26. ROUGH-TOOTHED DOLPHIN

Steno bredanensis Lesson, 1828

DESCRIPTION

The most distinctive characteristic of the rough-toothed dolphin is its rostrum which is quite long and slender, may be white along both sides, is compressed from side to side, and is not separated from the forehead by the transverse groove present in other long-snouted dolphins. Because the forehead and the sides of the head slope smoothly into the rostrum, when this animal is seen from above or from the side, its entire head appears very long and nearly conical.

Though the coloration of rough-toothed dolphins is quite variable, individuals are often purplish black on the back with yellowish white blotches on the side of the body. The flippers and flukes are dark and the belly is white. Individuals are frequently scarred with numerous white streaks.

Rough-toothed dolphins reach a length of at least 8 feet. In some areas of the Central Pacific, they are reportedly found associated with herds of Pacific pilot whales, a relationship which in the eastern Pacific exists between pilot whales and bottlenose dolphins.

Little is known of the natural history of this species, though several have been maintained successfully in captivity in Hawaii.

MAY BE CONFUSED WITH

Rough-toothed dolphins are mostly likely to be confused with the several species of Pacific bottlenose dolphins. The bottlenose dolphins differ, however, in the following ways:

Rough-Toothed Dolphin		Bottlenose Dolphin
Purplish with yellow spots	Color	Dark gray to black
Slender	Body	Robust
Long and slender; not clearly demarcated from forehead	Snout	Short and stubby and clearly demarcated from forehead

DISTRIBUTION

Though one rough-toothed dolphin was stranded as far north as Stinson Beach, Marin County, California, it was presumably a straggler or a dead animal which washed in from a considerable distance away. The normal range is probably further to the south and west.

Individuals are apparently abundant off Hawaii, and several were recently collected near Clipperton Island. From all indications, the rough-toothed dolphin is an offshore species limited to tropical or perhaps warmer temperate waters.

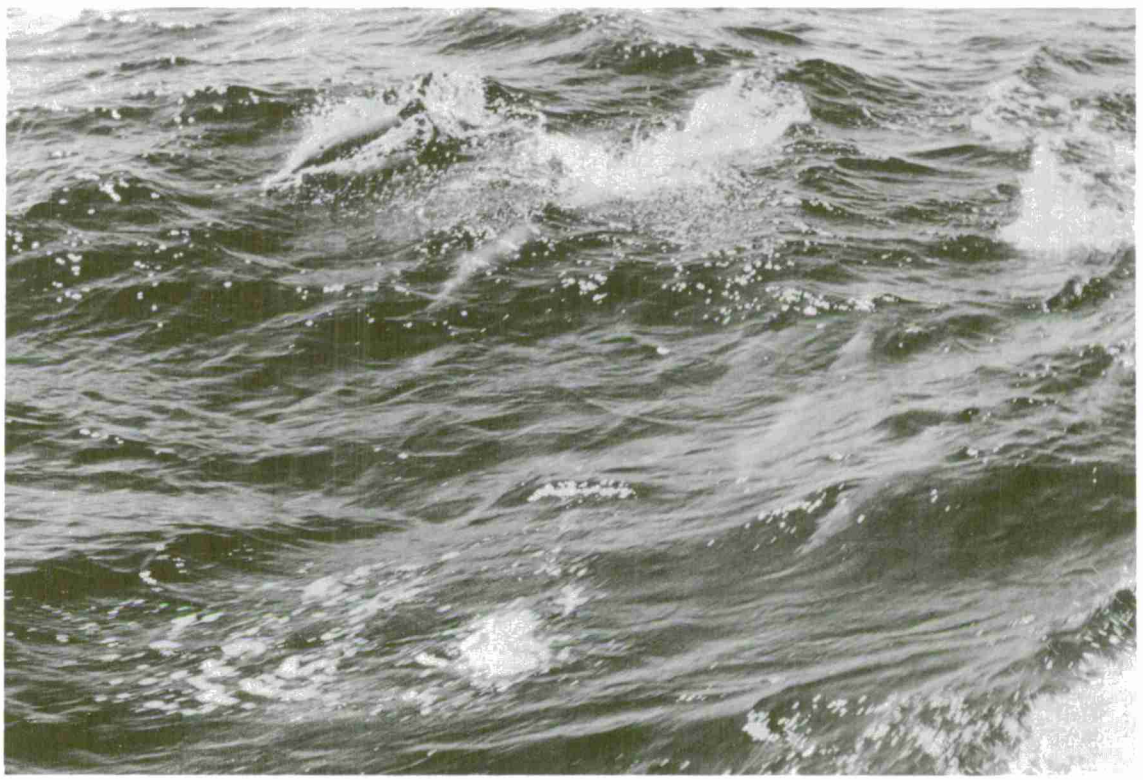


Figure 88. As this small group of rough-toothed dolphins rides the stern wake of a vessel near Hawaii, the gradually tapering head, one of the two most distinctive features of this species, is clearly visible. (photograph by W. E. Evans)

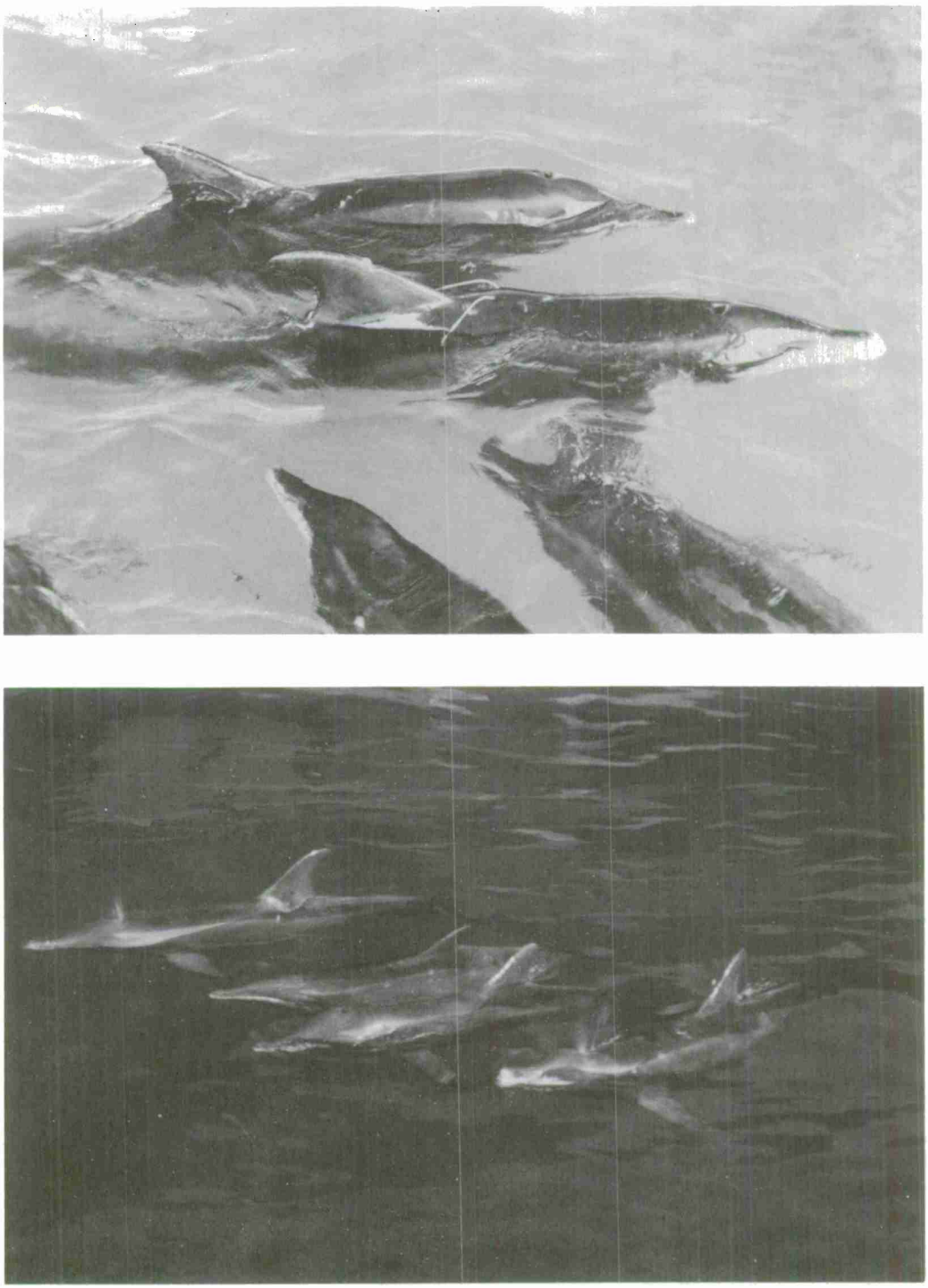


Figure 89. Captive rough-toothed dolphins. Note the distinctive, smoothly tapering head and the white snout. The streamers on the backs of the animals in the top photograph are experimental marker tags. (photographs courtesy of the Japanese Whale Research Institute)

SECTION 27. BOTTLENOSE DOLPHIN

Tursiops truncatus Montagu, 1821

DESCRIPTION

Members of this species and their Atlantic cousins, including Flipper, are the porpoises most commonly maintained in captivity at zoos, aquariums, marine parks, and research institutions. For that reason, they are more familiar to the general public than perhaps any other species of whale or porpoise.

Those in the Pacific Ocean reach a length of at least 12 feet, and a weight of over 1,000 pounds and often are very robust animals with an impressively large girth. In fact, individuals seen off Baja California in 1970 appeared almost as heavy as small pilot whales of the same length.

They are generally gray, though some of the animals in the Gulf of California, and off Central America, are almost black. Whatever the basic color, however, most animals are lighter, sometimes nearly white, on the belly.

Bottlenose dolphins have rather short stubby snouts, and dorsal fins which are broad at the base, tall, and backcurved. At least in the northern limit of their range, around the California Channel Islands, they are often found on the perimeter of herds of Pacific pilot whales. They will often move in to ride the bow wave of a moving vessel, sometimes riding on their sides and sometimes spinning completely around on their longitudinal axis when doing so. They are often found very close to shore and may even ride the surf.

Bottlenose dolphins often jump clear of the water as high as 15 or 20 feet, a behavior upon which the aquarium shows have capitalized.

MAY BE CONFUSED WITH

From a distance, bottlenose dolphins might be confused with a number of animals, including false killer whales and Risso's dolphins, but both these species are distributed well offshore, and though bottlenose dolphins have been seen as much as 500 miles at sea in tropical waters they are generally found much closer to shore and often enter bays, harbors, marinas and river mouths. They have been reported in as little as 3 feet of water in some Baja California lagoons. If close examination is possible the stubby snout and robust body of this species should prevent confusion with any other animal. Near Hawaii they may be confused with the rough-toothed dolphin. These species may be distinguished by differences tabulated in Section 26.

DISTRIBUTION

Pacific bottlenose dolphins are found from about Point Conception, California, south to the coastal waters of Baja California, the Gulf of California, Mexico, and Central America. Though one population near Catalina Island may be resident, the bottlenose dolphin appears to move into the northern end of its range, the area of the California Channel Islands, primarily during the summer months when coastal temperatures are warmer. They are abundant in the coastal lagoons and bays of Baja California, throughout the Gulf of California, mainland Mexico, and all of Central America. Though they have been reported well offshore (more than 500 miles) in the tropical fishing grounds, they are primarily a coastal species sometimes found in shallow bays, lagoons, and even in small man-made marinas.

Figure 90. Bottlenose dolphins near Mulege, Baja California, Mexico. (photograph by W. E. Evans)

Figure 91. Bottlenose dolphins near shore in Banderas Bay, Niyarit, Mexico. This species is frequently seen near shore, sometimes entering the surf zone and body surfing. (photograph by S. Leatherwood)

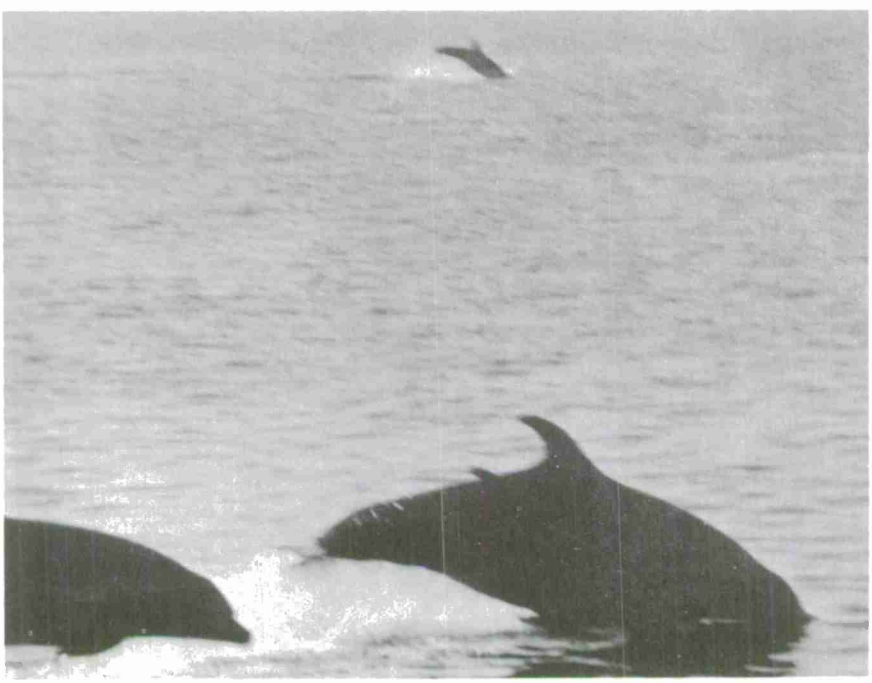
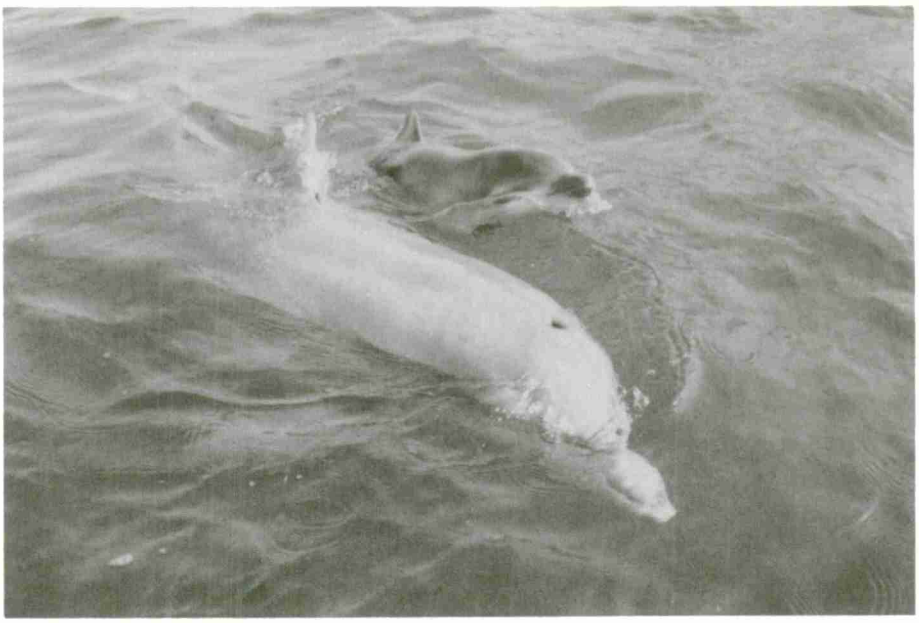


Figure 92. A mother and calf near Mulege, Baja California, Mexico. Note the stubby snout and the robust body, characteristic of at least one of the bottlenose dolphin species seen in the eastern Pacific. (photograph by W. E. Evans)



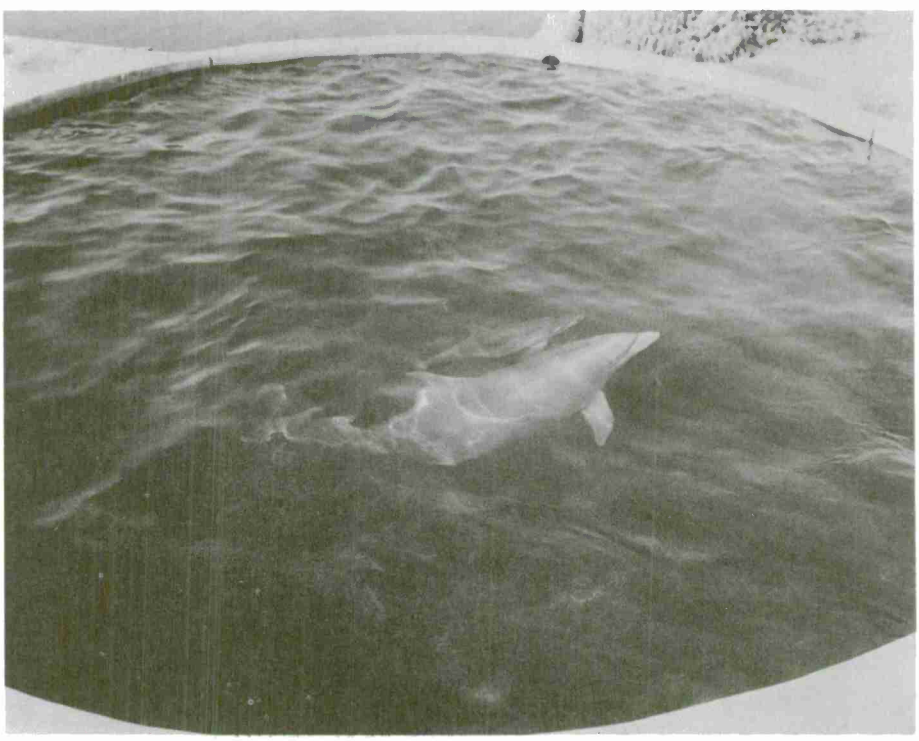


Figure 93. A mother and calf at Point Mugu, California. (photographs by R. F. Green)

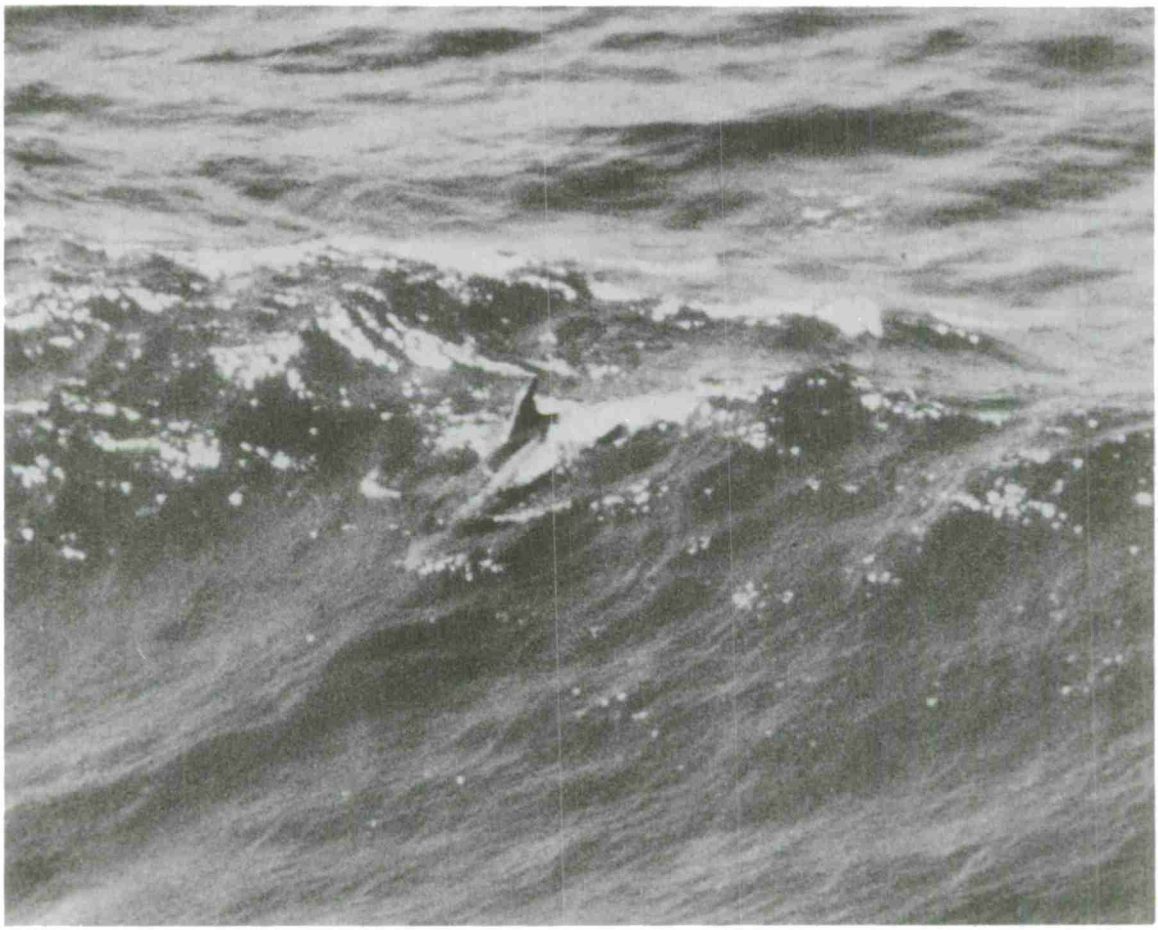


Figure 94. A Pacific bottlenose dolphin riding the surf at La Jolla, California. (photograph by K. D. Sexton)

SECTION 28. PYGMY KILLER WHALE

Feresa attenuata Gray, 1875

DESCRIPTION

Pygmy killer whales reach a length of about 8 or 9 feet. They are slender bodied with a rounded head and no beak. The dorsal fin, located about the center of the back, is between 1 and 2 feet tall, and resembles that of the bottlenosed dolphin; its leading edge slopes backwards, the rear margin is slightly concave, and the tip is pointed. The color has been described as dark gray or black with a small zone of white on the underside and thin lines of white around the lips. Very little is known about this species of small whale. Several specimens captured near Japan did very poorly in captivity and tended to be more aggressive than most other species of cetaceans held captive. However, nothing is known about the natural behavior of the animals. The paucity of information on this species make any sightings or beachings of particular interest.

MAY BE CONFUSED WITH

The pygmy killer whale resembles the false killer whale but is much smaller and can be distinguished at close range by the zones of white coloration. False killer whales are all-black and reach a length of over 18 feet.

DISTRIBUTION

Pygmy killer whales have been reported from Hawaii and from the tropical tuna fishing grounds several hundred miles off Costa Rica. There are no records from temperate waters so it may be assumed, pending further evidence, that this species is limited to tropical oceans.

SECTION 29. PYGMY SPERM WHALE
DWARF SPERM WHALE

Kogia breviceps Blainville, 1838
Kogia simus Owen, 1886

DESCRIPTION

There are two species of *Kogia* in the eastern North Pacific. Each one is characterized by a robust body, a squarish head, and a mouth which is more shark-like than whale-like and located well behind the tip of the snout. If the animals could be examined at close range, the head and mouth alone could be used to positively identify the genus. But *Kogia* are rarely seen at sea and are extremely difficult to identify. There is little or no visible blow and reportedly only the back is visible when the animal rolls to breathe. In addition, *Kogia* reportedly frequently rises very slowly to the surface to breathe, not rolling actively at the surface like most whales. As with the sperm whale, the blowhole is located off to the left side of the head.

K. breviceps, the larger of the two species, reaches a maximum length of 13 feet and is characterized by a very small recurved dorsal fin located 2/3 of the way back on the back. *Kogia simus* is slightly smaller, not exceeding 10 feet in length, and has a slightly taller dorsal fin located near the middle of the back.

MAY BE CONFUSED WITH

Pygmy sperm whales which are either beached or seen closely so that they may be carefully examined are so distinctive that they are unlikely to be confused with any other species.

DISTRIBUTION

Though they are probably not very numerous, pygmy sperm whales appear to be distributed continuously along the coasts of California, Baja California, Mexico, and Central America. They have been reported from Washington state south to Mazatlan, Sinaloa, Mexico and from the coast of Peru. They have also been reported in Hawaiian waters.

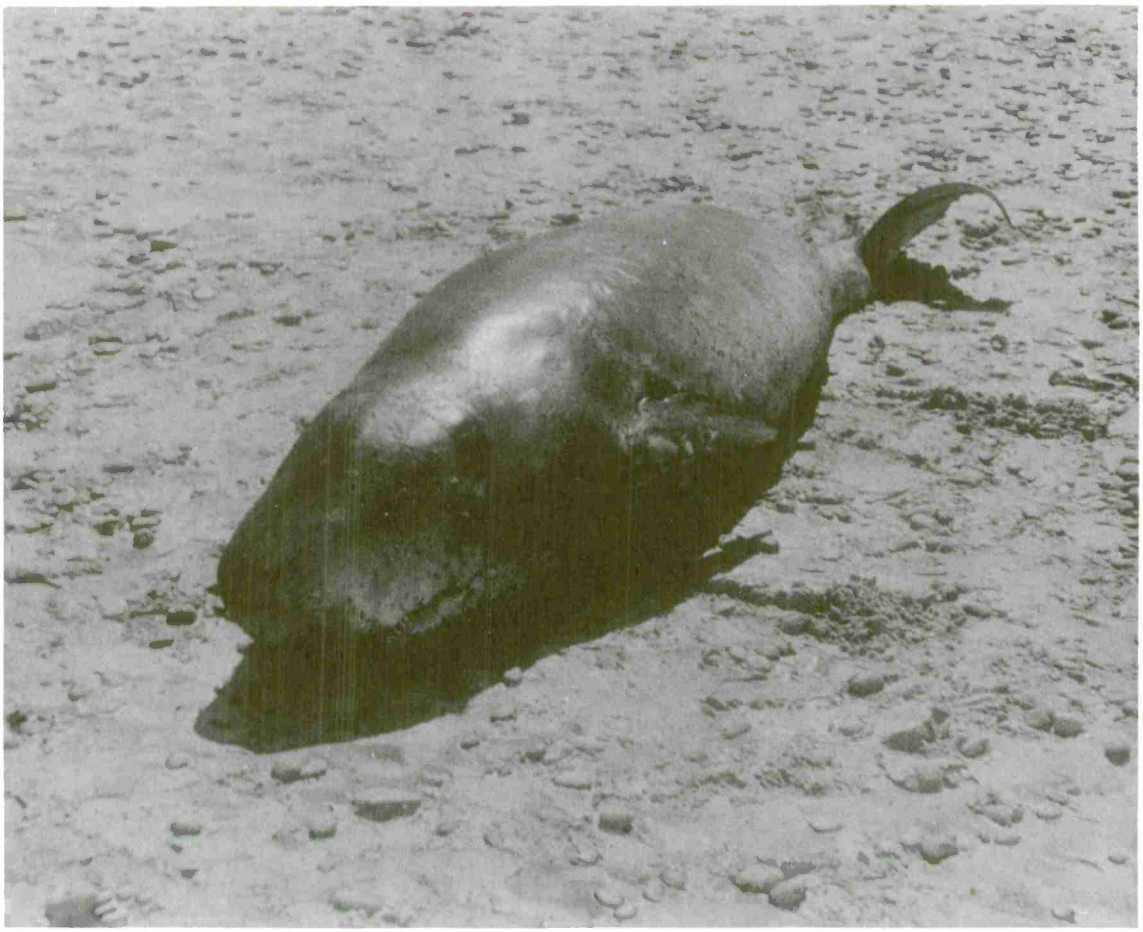


Figure 95. The robust body, blunted head, and sharklike mouth of the pygmy sperm whale are visible in this photograph. (photograph by Kurt Benirschke)

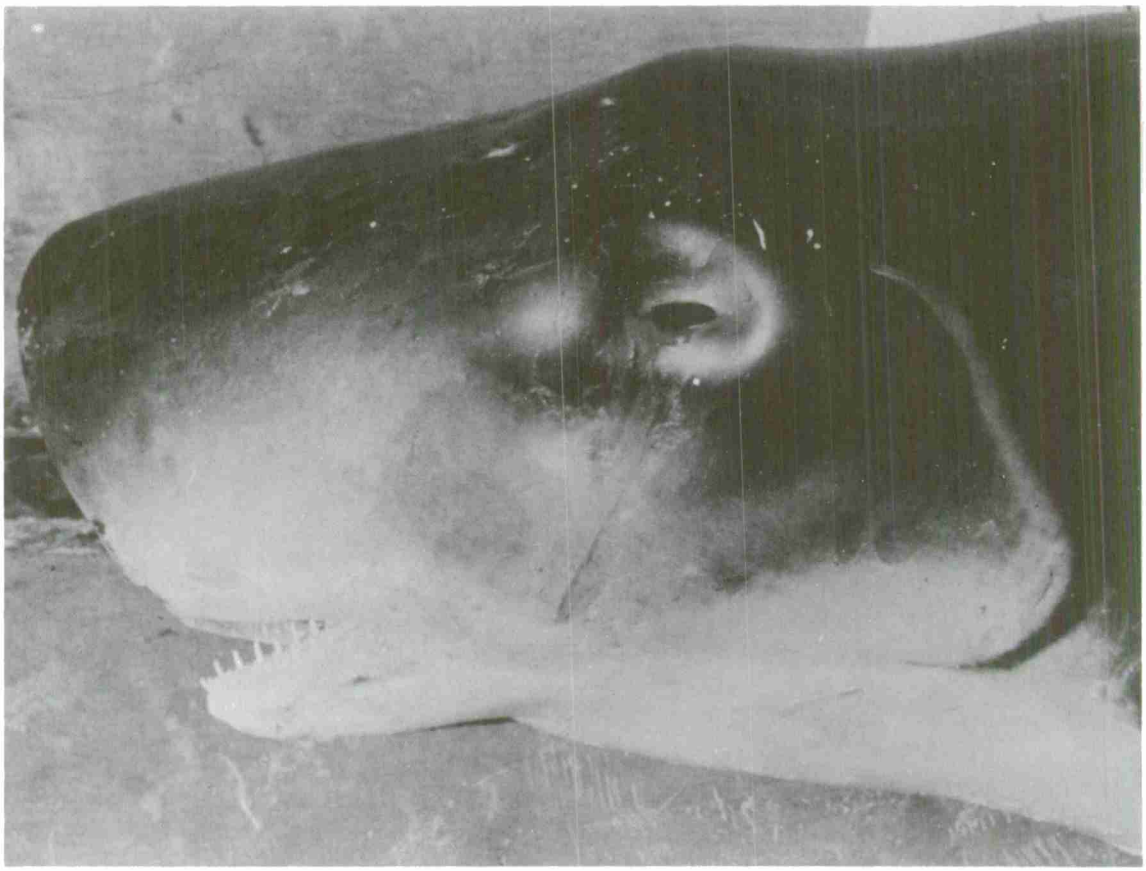


Figure 96. A closeup of the mouth of a pygmy sperm whale. (photograph courtesy of F. G. Wood)

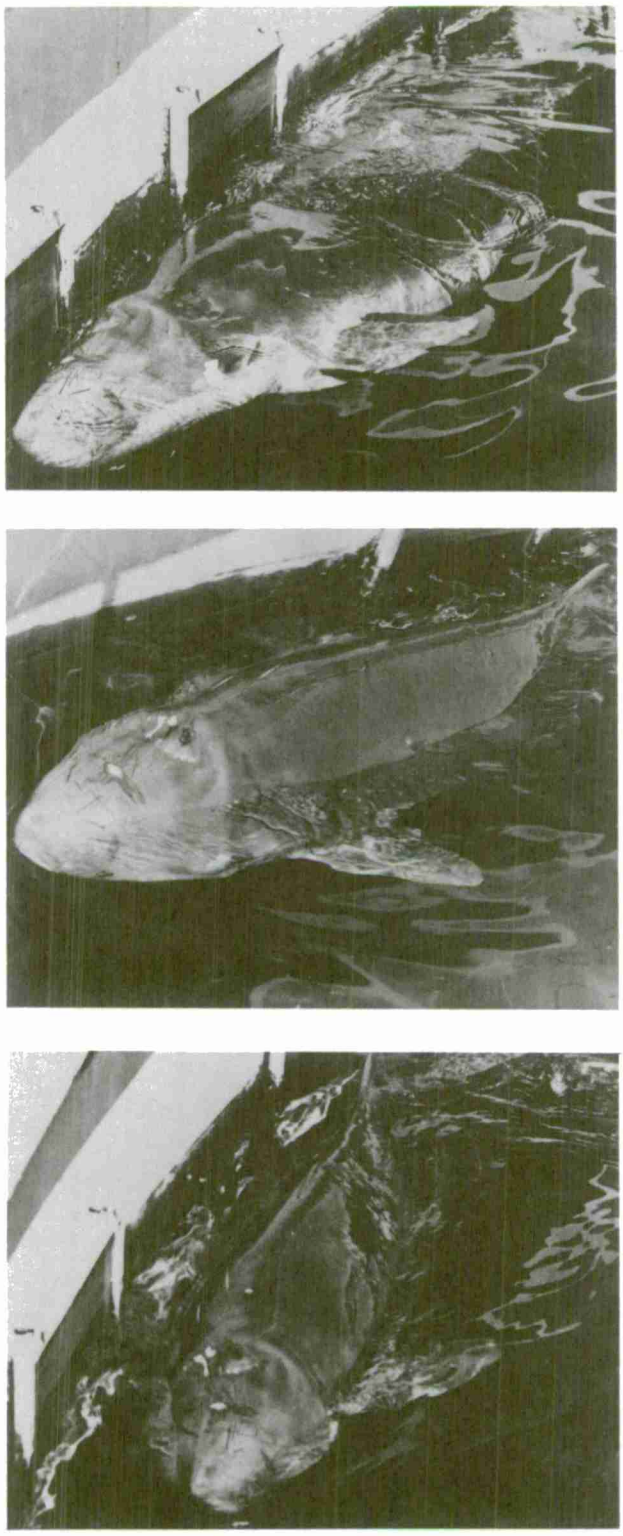


Figure 97. Three photos of a pygmy sperm whale in a tank at Marineland of Florida. There are no pictures available of this animal in the wild; it is rarely seen. (photographs by David C. Caldwell)

SECTION 30. NORTHERN RIGHT WHALE DOLPHIN

Lissodelphis borealis Peale, 1848

DESCRIPTION

The northern right whale dolphin may be distinguished from all other dolphins in the eastern North Pacific by its lack of a dorsal fin and by some very distinctive behaviors. Its body is long and slender, reaching a length in excess of 9 feet, and tapers to an extremely slender tail stock and tail flukes. The back is black, on the chest there is an hourglass-shaped region of very pure white, and there is a distinct border between the two colors.

Right whale dolphins usually travel in schools of from several hundred to several thousand individuals and may be seen with common dolphins and/or Pacific white-sided dolphins. They have also been reported with Risso's dolphins and in the immediate area of Dall's porpoises. Schools of right whale dolphins are often very tightly packed and frequently avoid boats, sometimes moving away at high speeds in a series of low-profile leaps which may whip acres of water into a white foam. Much of the herd may be airborne at the same time but the kind of jumping activity is different from that of Pacific white-sided dolphins. Right whale dolphins leap on an even keel and do not engage in aerobatics.

Though they are usually timid and avoid boats, northern right whale dolphins do sometimes ride the bow wave, permitting close examination, tagging or capture.

MAY BE CONFUSED WITH

At times, when they are moving through the water slowly, barely exposing the head and back, or when they are alarmed, and swim very rapidly in a series of low-profile leaps across the surface of the water, these animals may resemble a moving herd of sea lions or fur seals. At close range, however, these uniquely marked animals are unlikely to be confused with any other species of dolphin or whale.

DISTRIBUTION

In the eastern Pacific, right whale dolphins are found at least from San Clemente Island (32°35′) north to 50°N latitude and well offshore. They are apparently most abundant from about Point Sur south to Point Conception and the area of the northern California Channel Islands (Santa Rosa, San Miguel, and perhaps San Nicholas) and move further south only when fingers of cold water extend down the coast. Right whale dolphins appear to be relatively rare off Northern California, Washington, and Oregon.

Though it is probably primarily an open-ocean species and may occur continually across the Pacific, the northern right whale dolphin has been reported as close as 8 miles to the mainland, and two specimens were captured within a few miles of Santa Rosa Island in 1968.

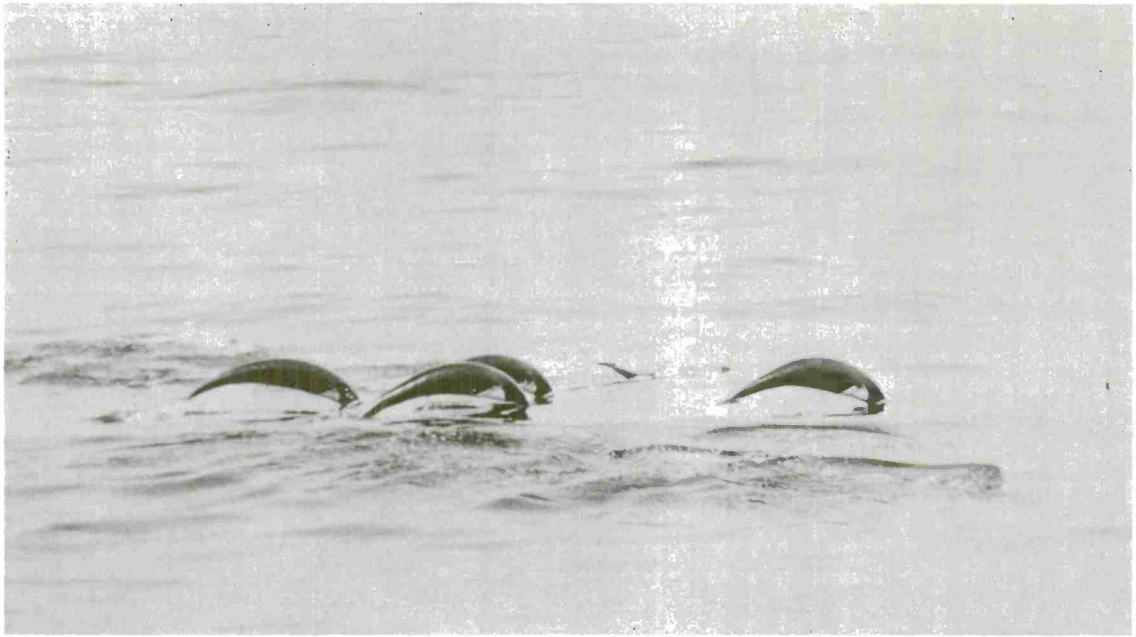


Figure 98. Northern right whale dolphins are very wary and difficult to approach; they may begin a series of low-angle leaps as they flee a boat. (photographs by K. C. Balcomb)

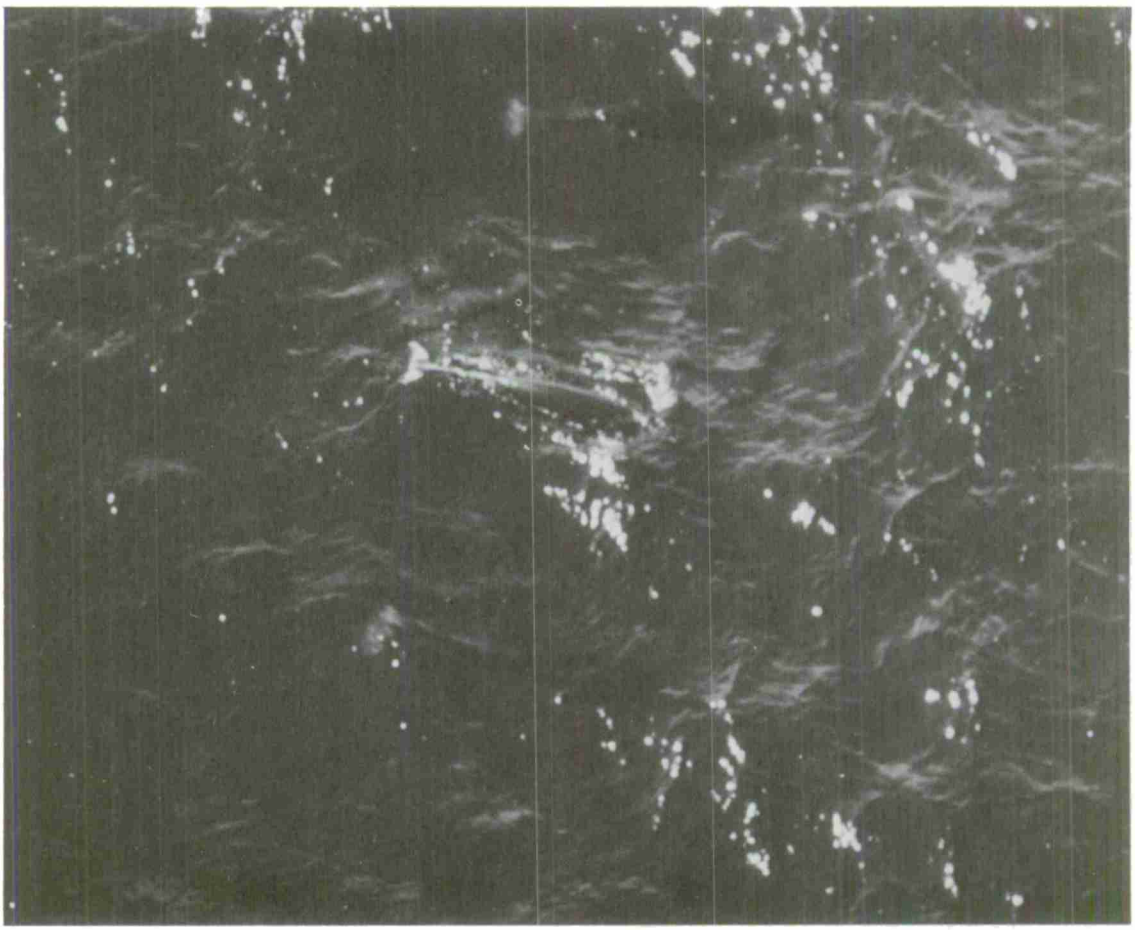


Figure 99. Northern right whale dolphins photographed from a helicopter. The animals were very frightened of the aircraft and sounded whenever it approached. (photographs by S. Leatherwood)

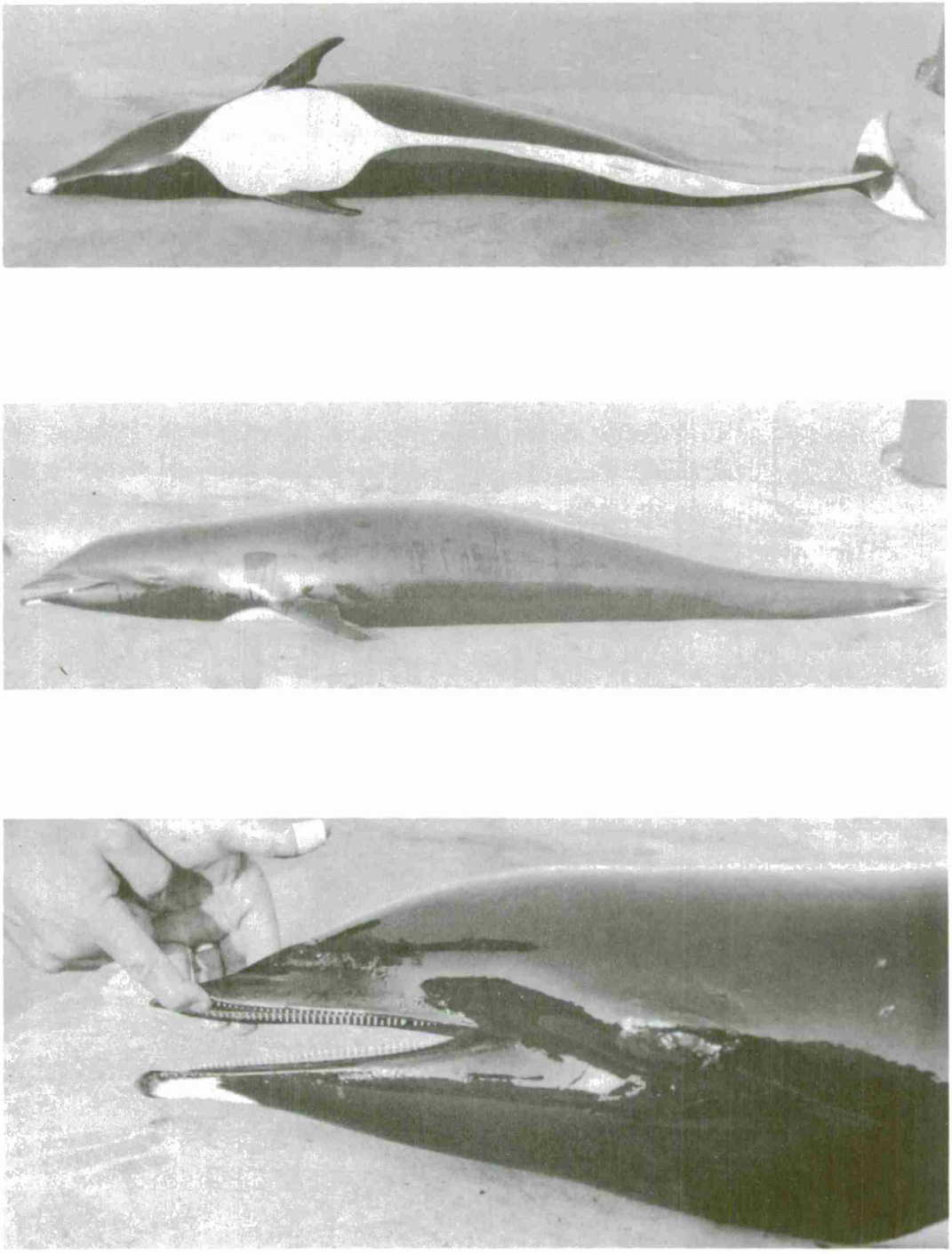


Figure 100. Three views of a northern right whale dolphin kept in captivity for several days at Point Mugu, California in 1969. Note the slender body, the absence of a dorsal fin, and the white coloration of the belly, all distinctive field characteristics. (photograph by F. G. Wood)

Figure 101. Two northern right whale dolphins on the bow of a ship off San Francisco, California. On the bow, this species is easy to identify. (photograph by S. Leatherwood)

Figure 102. Right whale dolphins, including a calf, run from a helicopter near San Clemente Island, California. The characteristic low-profile jumps are clearly visible. (photograph by S. Leatherwood)

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Appendix A

TAGS ON WHALES AND PORPOISES

Since the early day of the famous whaling captain, Charles M. Scammon, the study of the habits of whales and porpoises has continued to be slow and painstaking. One of the most limiting factors has been the difficulty of positively identifying a single animal or group of animals from one encounter to the next. Most members of the same species look so much alike that it is difficult to distinguish between them. In recent years, in an attempt to overcome this problem so that migration routes and specifics of behavior can be delineated, scientists have been placing marks on various species and carefully monitoring their movements.

The importance of marking commercially valuable cetaceans was recognized long ago, and since the mid 1920's, large numbers of Discovery-type tags have been placed in whales using a shotgun. The recovery of these tags from the carcasses of whales killed by the various whaling nations has provided valuable information on the movement patterns and on basic aspects of the growth and development of the harvested species of whales. But there are serious limitations to this method. It can be used only on species which will later be killed, and is not visible in the living animal. More recent developments have related to various kinds of marks which will be visible on a free swimming animal. Large whales may be tagged with spaghetti streamers (an experimental spaghetti tag was recently placed in the back of a blue whale off San Clemente Island, California). The usage of marks similar to these will probably be expanded in the future.

Because they often ride the bow wave of a moving vessel, thereby making themselves accessible for tagging and capture, small porpoises have been tagged with a greater variety of marks than large whales. In recent years, at least four kinds of tags (figure A.1) have been placed on six species of small toothed whales in the eastern North Pacific. The program will continue to tag animals primarily in an area from San Francisco south to Cabo San Lucas, Baja California, Mexico, and throughout the Gulf of California. It should be emphasized however, that a tagged animal may show up anywhere in the eastern North Pacific at any time.

The entire success of a tagging program of this kind depends on resightings of tagged animals and recovery of tags. In this regard, we need the cooperation of boaters who frequently see porpoises. If you see a tagged animal, please report the date, time, and location, and a description of the tag to our office. The radio tags, which are used to track animal's movements for up to 72 hours and then may remain on the animal for up to 30 days, should be visible even at a considerable distance (figure A.2). Button tags are placed in the dorsal fin (figure A.3) and should be visible as an animal surfaces to breathe or as it rides the bow wave. At a close range, the number, letter, or design may also be visible (figure A.4). Spaghetti tags (orange, yellow, white, or green) are placed in the blubber near the base of the dorsal fin and stream to conform to the contour of the animal's body as he swims (figure A.5). It will not be possible to identify numbers of a spaghetti tag on a moving

animal. Finally, freeze brands (figure A.6) are placed on the back or dorsal fin and provide a permanent mark which leaves the tagged animal free of encumbrances.

This list of tags is not exhaustive. New marks may be developed at any time. For that reason, persons seeing dolphins, porpoises, or whales with these or any other marks or tags are requested to send a description of the animal and the tag, along with the date, time, and location of the sighting to our office. Your help will perhaps enable us to begin to unravel some of the mystery surrounding the distribution and movements of porpoises and whales.

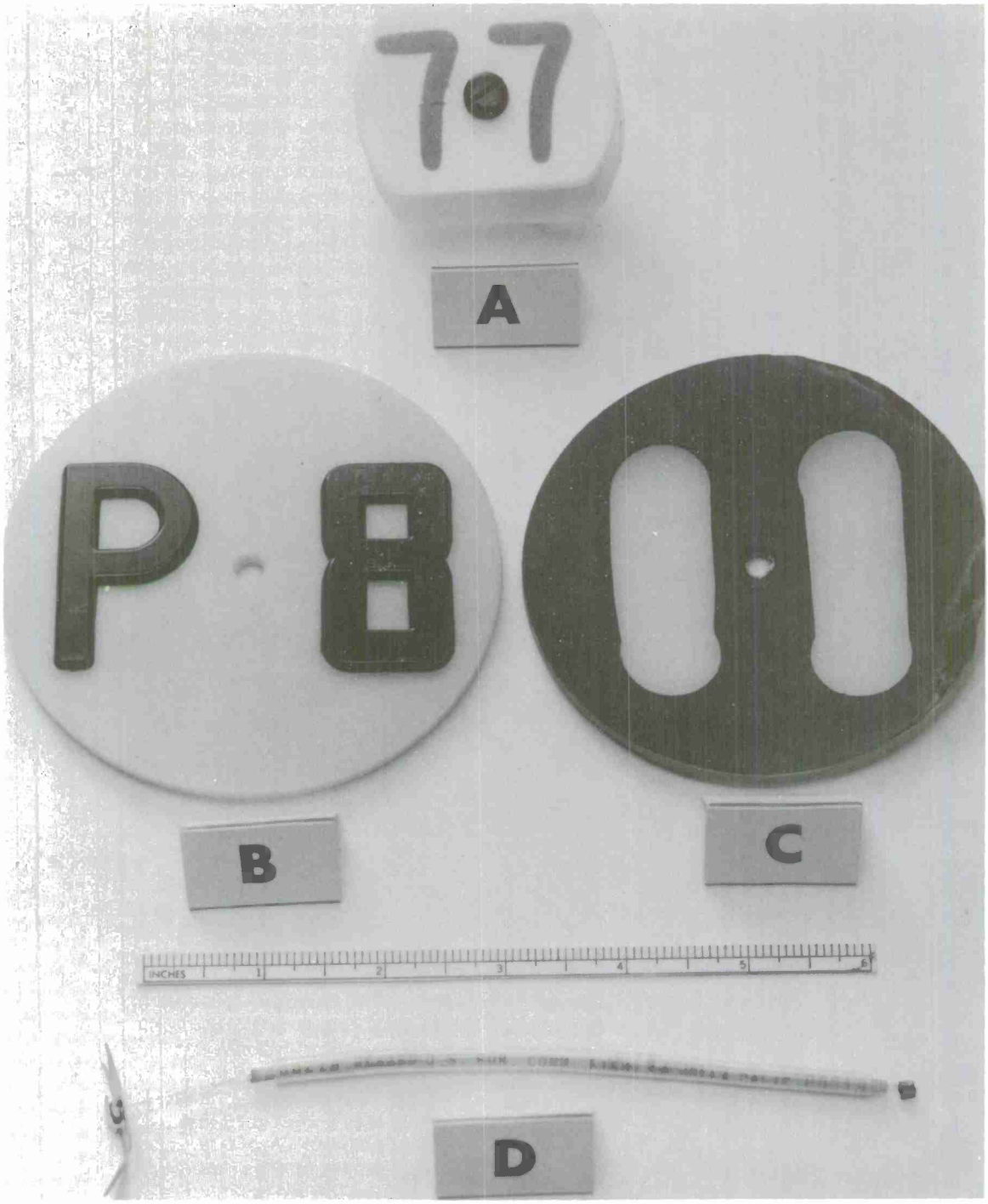

Figure A1. The basic kinds of tags used to mark porpoises. A, B, and C are the nylon button tags used in the first three years of NUC's cetacean tagging program (all button tags are now discontinued). D is a vinyl spaghetti tag. Not shown is a modification of the spaghetti tag (D) which is no longer, and a freeze brand, the newest and most promising method. (NUC photograph)

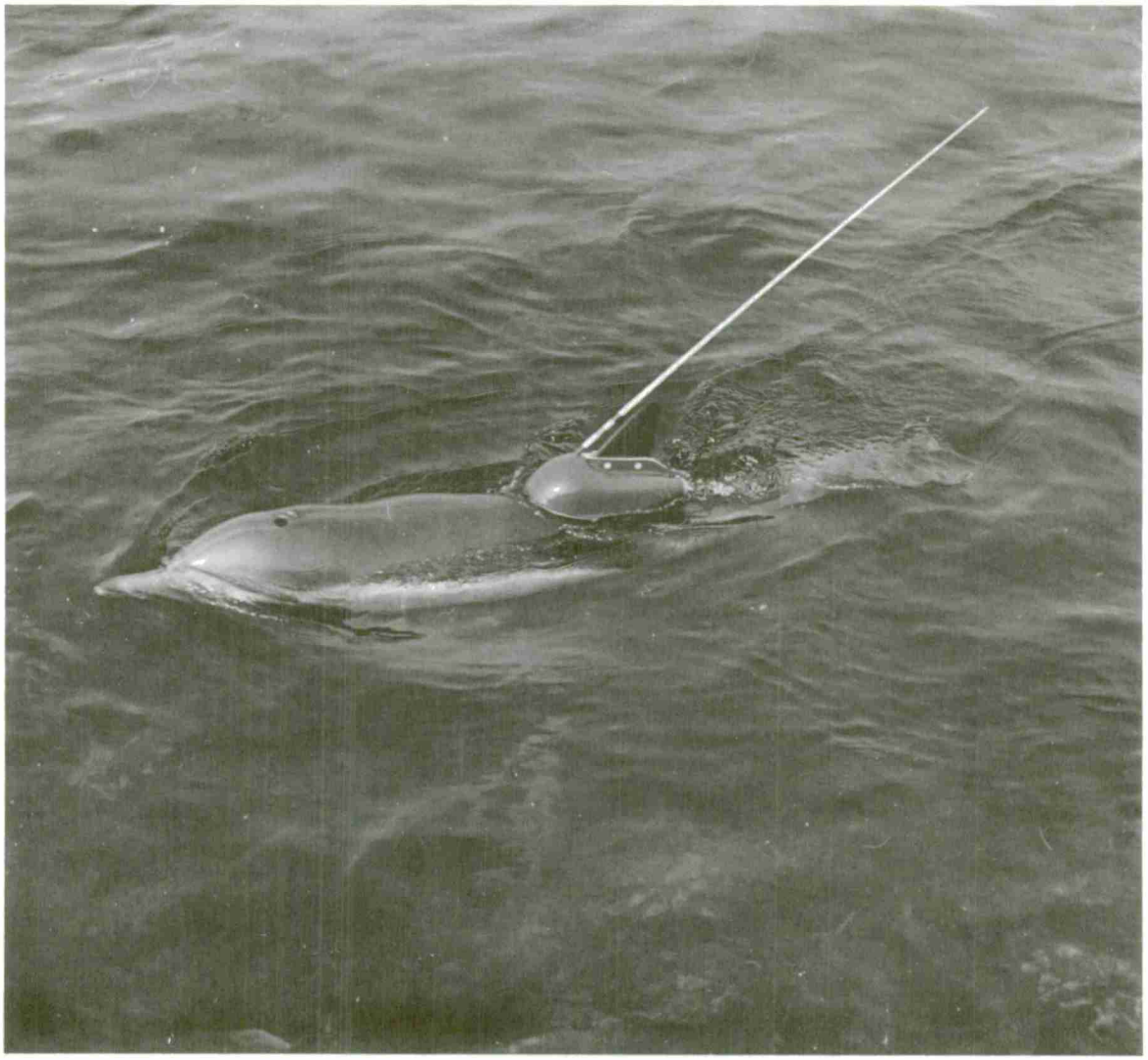

Figure A2. A porpoise wearing a radio transmitter tag surfaces to breathe off Southern California. The radio transmitter relays information on the animal's movements and diving behavior to scientists aboard a tracking vessel. (photograph by W. E. Evans)

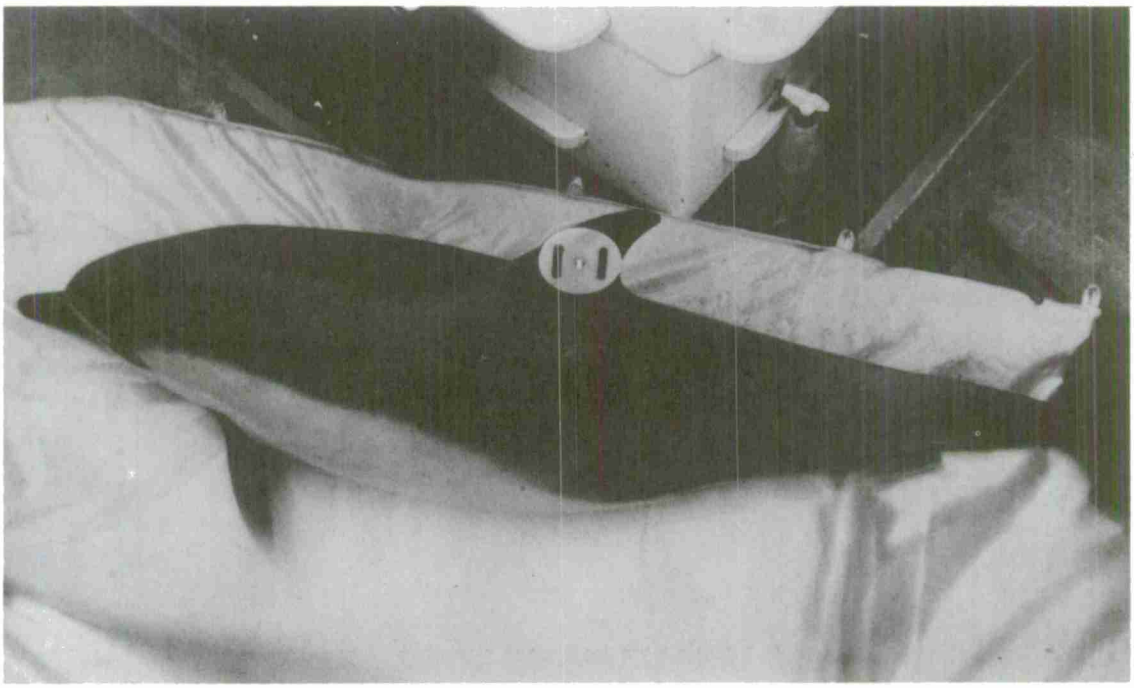

Figure A3. A button tag placed on the dorsal fin of a newly captured porpoise. The tag will permit identification of the animal even from a considerable distance. (photograph by W. E. Evans)

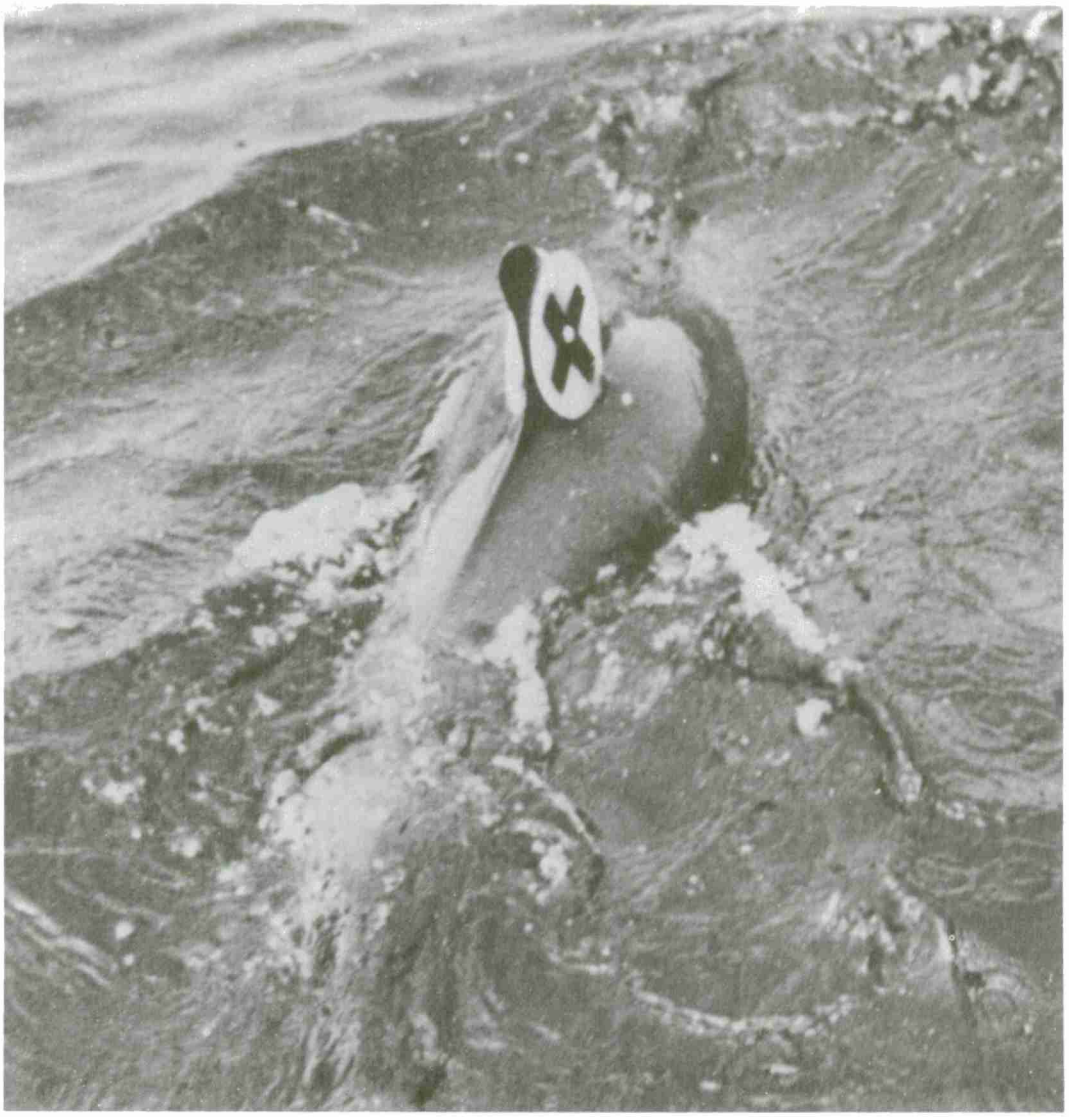

Figure A4. A button tag on the dorsal fin of a porpoise surfacing to breathe beside a boat off Catalina Island, California. (photograph by Bob Noble, courtesy of Marineland of the Pacific)

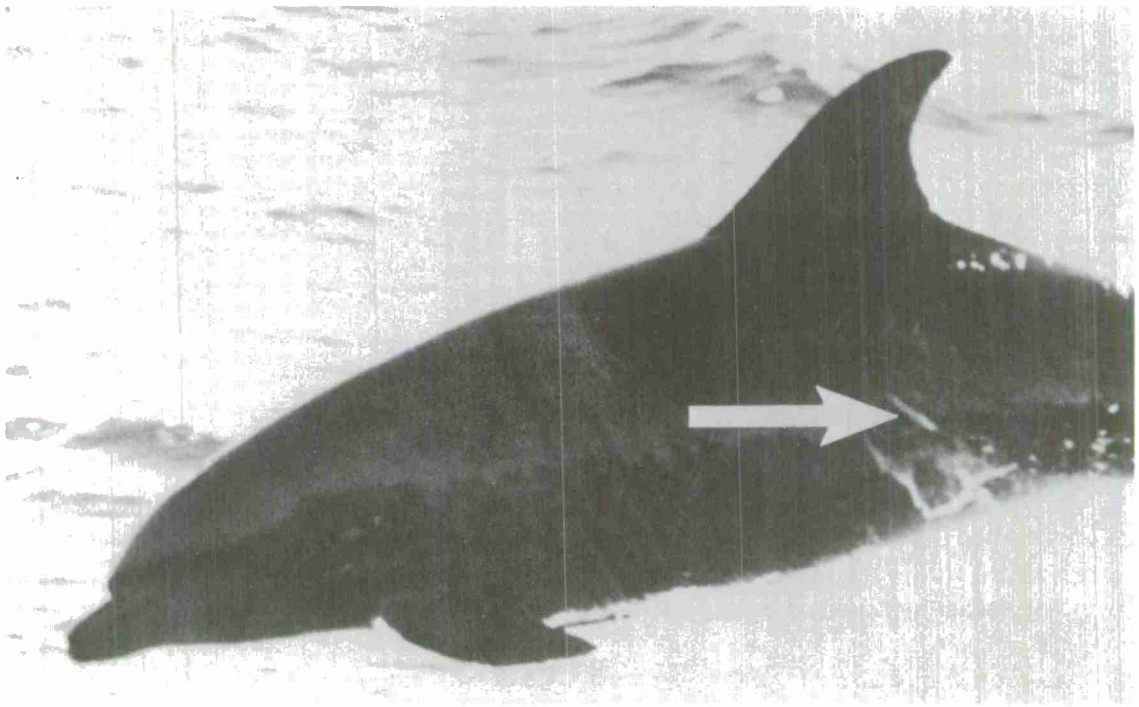

Figure A5. A spaghetti tag in the flank of a bottlenose dolphin in the Gulf of California, October 1970. This tag was placed unusually low; they are usually high on the back just in front of the dorsal fin. (photograph by W. E. Evans)

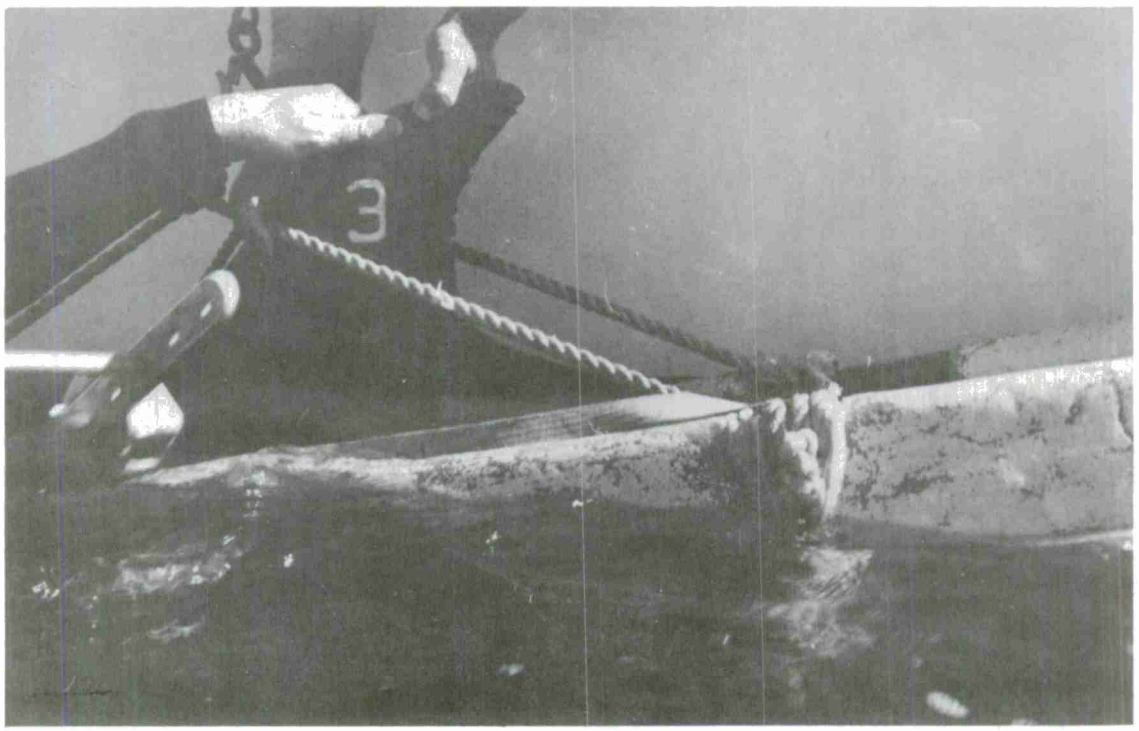

Figure A6. Freeze branding is an apparently painless method of applying a permanent identifying mark to the body of a porpoise or whale. The most promising of the new methods of marking, it will probably be used extensively in the coming years. (photograph by A. B. Irvine)

Appendix B.

SAMPLE SIGHTING REPORT

DATE AND LOCAL TIME

7 July 1971 1530 Pacific Standard Time

LOCATION (LATITUDE AND LONGITUDE)

31°52'N x 119°05'W

IDENTIFICATION*

If more than one species of whale has been sighted, try to identify each. Give both the common and the scientific names. Even if you cannot identify the animal, describe and if possible sketch and photograph it and fill out the rest of the sighting report. Even experienced observers often cannot positively identify animals from the brief encounters typical at sea, so don't hesitate to send in a report without a positive identification.

Common name Short finned pilot whale (Pacific Pilot Whale)

Scientific name Globicephala macrorhyncha

NUMBER OF ANIMALS SIGHTED

15-20 in two separate groups

HEADING OF ANIMAL(S) (MAGNETIC)

220°

ESTIMATED SPEED (KNOTS)

2-3 knots

ASSOCIATED BIRDS OR FISHES

5 Pacific Bottlenose dolphins swimming same direction about 200 yds to. east - Many gulls and terns nearby feeding on bait

**Since one thing scientists are trying to determine is the areas in which cetaceans are found, as opposed to those in which they are seldom or never found, it is important that persons report even those cruises on which nothing is seen. Looking at a number of such tracks (course transects) through any area permits prediction of those areas in which cetaceans might be found and suggests areas which would be lucrative for more indepth studies.*

TAGS (See Appendix A)

Describe any tags that may be visible on the animal(s). State its shape, approximate size, color, location on the animal's body, and any number or symbol that may be visible.

One pilot whale had a streamer tag just below the dorsal fin on the right side - yellow with a black band near the top

REMARKS

In addition to the above information it may be important to note observations on the animal's behavior. For example, in the case of the smaller porpoises, did the animals approach the vessel or ignore it? Did they ride the bow wave? Did they jump from the water, and if so did they jump in a smooth arc or sometimes belly flop or spin or somersault? For the larger whales, how many times did they blow, how long did they stay down between blows? Did the animal show its flukes when it began a dive?

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A GUIDE TO THEIR IDENTIFICATION IN THE WATER

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13. ABSTRACT

This field guide is designed to assist the layman in identifying the whales, dolphins, and porpoises he sees in the eastern North Pacific, including all the area north of the equator and east of 180 degrees W longitude. The animals described are grouped not by scientific relationships but by similarities in appearance in the field. Photographs of the animals in their natural environment are the main aids to identification.

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Security Classification

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
marine mammals cetaceans whales dolphins porpoises						

SIGHTING REPORT

DATE AND LOCAL TIME

_____

LOCATION (LATITUDE AND LONGITUDE)

_____

IDENTIFICATION

Common name _____

Scientific name _____

NUMBER OF ANIMALS SIGHTED

_____

HEADING OF ANIMAL(S) (MAGNETIC)

_____

ESTIMATED SPEED (KNOTS)

_____

ASSOCIATED BIRDS OR FISHES

_____

_____

TAGS

_____

_____

REMARKS

_____

_____

_____

_____

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